

Issue 380
Autumn 2020

IJGlobal

Project Finance & Infrastructure Journal



EUROPE

Seagreen offshore wind farm

NORTH AMERICA

Hamilton Projects Acquiror

LATIN AMERICA

INova solar portfolio, Mexico

ASIA PACIFIC

Almaty Ring Road PPP

MIDDLE EAST & AFRICA

Al Kharsaah solar PV first phase

POWER & RENEWABLES REPORT 2020 INSIDE

Energizing the world

Maintaining the flow of investment
in the coronavirus environment

Your Trusted Partner in Project Finance

FLNG Liquefaction 3 **US\$3,405 million**

5.0 MTPA LNG project
refinancing

Joint Lead Arranger



USA 2020

Coastal GasLink Pipeline **CAD\$6,600 million**

670 KM natural gas
pipeline project

Lender

Coastal GasLink

Canada 2020

Sabine Pass Liquefaction **US\$1,200 million**

Revolving line
refinancing

Joint Lead Arranger



USA 2020

Meade Pipeline **US\$918 million**

185 miles natural gas
pipeline

Joint Lead Arranger
Joint Bookrunner



USA 2019

LBCT **US\$625 million**

Port/terminal
infrastructure
Joint Lead Arranger



USA 2019

Guernsey Power Station **US\$1,075 million**

1,850 MW CCGT project

Coordinating Lead
Arranger



USA 2019

Venture Global CP **US\$5,777 million**

10 MTPA LNG facility

Coordinating Lead
Arranger



USA 2019

Cheniere Energy Partners **US\$1,500 million**

4.5 MTPA LNG project

Joint Lead Arranger



USA 2019

Revere Power **US\$570 million**

1,143 MW power
portfolio

Lender



USA 2019

Oregon Clean Energy **US\$580 million**

870 MW CCGT facility

Joint Lead Arranger
Joint Bookrunner



USA 2019

CPV Shore Holdings **US\$545 million**

725 MW CCGT facility

Lender



USA 2018

Edgewater Generation **US\$1,050 million**

1.8 GW power portfolio

Syndication Agent
Lead Arranger



USA 2018



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A curious time to be alive

Sitting in the dining room peering through a wall of chilli plant leaves that semi-obscure the view of more potted plants than your average London dweller can lay claim to... and you can't help but think "what a curious time to be alive".

Granted, what we're "going through" does not hold a candle to living in a war-ravaged nation, or sheltering from a zombie infestation, but it is... well, it's just a bit odd.

Having worked close to a colleague back at the start of March who came down with coronavirus, I – and by consequence my wife – have been working from home since the early days of the pandemic in England. Now that the UK government is recommending that people continue to work from home, making ominous noises about this lasting until March 2021, that could be a whole year WFH... or "living at work" as it's now better known.

In those early days, you could hear a pin drop in London. The occasional car slunk past with the back seat loaded to bursting with lavatory paper and hand sanitizer, while air traffic (Heathrow flights plague the London Borough of Richmond) ground to a halt, and you had a month-long wait for the next online shopping slot. It was curiously peaceful, you could even say zen.

But for all the quiet, the future looked pretty damn bleak. Quite apart from the Covid-19 global death toll, which (at the time of writing) was edging uncomfortably close to the one million mark, a shadow was cast over many people's future employment and most folk expected that greenfield infra/energy would grind to a halt and brownfield be severely impacted.

For us at *IJGlobal*, our events business model took a massive hit. We had to cancel our beloved awards nights in March and all conferences were immediately put on hold. But we persevered – as the industry has done – and kept the daily newsletter rolling out with an awful lot more news than we had anticipated.

When it came to our famed LatAm forum that we proudly host in Miami each March, we switched this headline event over to a virtual format... which actually worked very well. In fact, it worked so well that I suspect that it will transform future conferences.

Don't get me wrong. We have every intention of hosting future events in Miami (fingers crossed for 2021), but when speakers have to pull out at the last minute (usually politicians) I think the audience will be more receptive to virtual appearances than had previously been the case.

And what stands true for IJ, stands true for the broader industry. The Dunkirk Spirit is alive and kicking in the global infra/energy community which is only too apparent as you wade through this issue of our (for now) online-only magazine and marvel at the deals that have been closed in lockdown.

One of the key features of this magazines – and future issues – is the section we devote to people moves. How curious that there have been so many high-profile job changes in such a turbulent market, which serves as timely a reminder that the recession was brought on by the machine being switched off, not by it breaking.

Of course, you can't expect that engine to start again without a few splutters and coughs... not dry ones, please.



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The global infra recruitment landscape

Dan McCarthy – the New York-based chief executive of infrastructure and energy placement specialist One Search – spots trends in the global recruitment arena



Anyone who thought “the virus” would slow down hiring in the global infra/energy investment space – probably the same people still disinfecting their shopping – must by now have accepted that they were wrong.

I must admit, in those first few bewildering weeks of the crisis, I was one of them. I couldn't see how 2020 could be anything other than a disaster, and started preparing for a long period of market inactivity.

Like an election pollster, I couldn't have been more brilliantly wrong. The last 6 months have turned out to be one of the most active half-year periods I can remember, and much of our activity during those weird but busy months of April, May and June has culminated in a jam-packed people move roster for Q3.

One Search had a tremendously successful Q3 and we're keeping HR departments busy right across the industry, setting up all these new starters with their laptops and Zoom accounts. Here are just a handful of the most notable transfers during the period.

New York/Chicago/London: CIBC made a bold statement of intent, with a triumvirate

of renewables MD hires in Frank Palladino (IB), Robert Todd (IB) and James Wright (PF).

London: Digital Colony hired Jennifer Smith (ex-euNetworks) as CFO for its new Wildstone platform, which marks its entry into the Digital Billboards arena.

Luxembourg: One Search loves the Grand Duchy (our own Jack Atkins pretty much lives there these days) and was happy to facilitate the hire of Joseba Echave from Cintra into the Ardian Lux team.

New York: Stonepeak marks the launch of its Global Renewables Fund with the hire of Will Demas, from CIP.

London: HSBC Asset Management has hired a director to lead its new high-yield infra debt product, with Dimitrios Papatheodorou starting 30 September from Sequoia.

Vienna: Our EMEA infra debt superstar Nameesha Sharma had a couple of Viennese Whirls during lockdown – placing both Piotr Leszek Nagorka and Ben Clay at director level with KommunalKredit in Q3.

London: Another Nammy Sharma special – facilitating the switch of Rohini Pahwa from RBS into the Head of Distribution (Power & Infra) at Investec

London: You don't see many people switch from debt to equity, especially after already making MD. But you also don't get many Adam Larkins to the dozen. He has joined GIP as a principal in its infra equity investment business.

Diversity

As you must know by now, One Search is at the forefront of the push for diversity and inclusion in infra/energy investment. In Q3, 48% of our hires identify as women. This demolishes the industry average of 18% and I want to thank my team – and indeed our progressive client base – for their ongoing commitment to the cause.

Notable moves made by talented women include Jasmine Ko to Antin; Joni Koch to SDCL; Letitia Ferreras to Allianz GI; Saurabhi Mall and Daniela Urias to CIBC; Maelle Pradeu to Stepstone; Rachele Angeli to iCON; Giulia Rusconi to SMBC; and Marta Busetti to MIRA.

SDCL

Santander evacuees Alejandro Ciruelos and Javier Jimenez cropped up at Sustainable Development Capital (SDCL) having exited the Spanish bank in May. Both hold the MD title and will be focused on the financing and investment of utility-scale power generation and renewable energy projects.

PSP Investments

PSP Investments – the Canadian public sector pensions investment manager – suffered a spate of losses last quarter from the team in Montreal with the key ones being: Michael

Nachaty, senior manager for infra investments, to Ontario Teachers; Salman Yayya, infra investments manager, to Brookfield AM; Cyrus Aga, infra investments associate, GIP.

Civis

Well-known UK infra figure Barry Millsom exited Dalmore Capital to take on the top job at one of the funds it manages. Millsom started in July as MD of Civis PFI/PPP Infrastructure Fund, leaving Dalmore where he had been since early 2016. He was shortly joined by Michael Williams as investment director and Henno Potgieter as finance director.



Broadstone Capital Advisors

John Kirwan in early September exited Rubicon Capital Advisors to set up his own outfit – Broadstone Capital Advisors. He joined Rubicon in October 2018 from Scotiabank. The senior team in the new shop includes: Alistair Lowe, MD and head of debt; Laura Peleteiro, senior associate; Martin Murphy, strategic adviser.

Vinci Highways

Belen Marcos was made chair of Vinci Highways, the of Vinci Concessions subsidiary. She also becomes an executive VP of Vinci Concessions, and will join its management committee headed by chief exec Nicolas Notebaert. Marcos operates out of Paris and will drive growth in motorway concessions.

Belen Marcos



World Bank

Keith Hansen started in September as country director for Kenya, Rwanda, Somalia and Uganda at World Bank, succeeding Carlos Felipe Jaramillo. He will be based in Nairobi and is a WB veteran, most recently working as a senior adviser to the World Bank's chief executive.

Aquila Capital

NordLB veteran Christian Krebs has moved back to Singapore following a year at Australian advisory boutique Energy Estate to join Aquila Capital as head of investment and development. Krebs joined Energy Estate in Sydney in April 2019 to build out the international debt and PF capacity as the company expanded.

Ørsted

Mads Nipper took on the role of chief executive at Ørsted, replacing Henrik Poulsen who stepped down in June. Nipper joins from his previous chief exec role at Danish pump manufacturer Grundfos, where he was also group president.

Mads Nipper



HIG Capital

Andrew Liao stepped down from his role as London-based senior managing director at Ardian to join private equity specialist HIG Capital. He joins in January and will co-lead the new global infra equity build-out, working alongside New York based Ed Pallesen.

MUFG Bank

Kristy Datson was named MUFG Bank head of resources, utilities, infrastructure and transport for Oceania. She joined the bank in July 2018 as a director servicing Melbourne and Adelaide-based clients across infra, transport and utilities sectors, with a focus on PF, loan syndications and debt capital market products.

EY

Harry Brunt in August became the fourth DLA Piper lawyer in recent time to leave the firm to join EY's newly-established UK legal energy team in London. He will work under fellow DLA Piper breakaway Charles Morrison in the legal unit and Dimitri Papaefstratiou who moved to EY earlier this summer.

MIC

Macquarie Infrastructure Corporation promoted Nick O'Neil to CFO, replacing Liam Stewart, effective from start September. He exited his job as MD but will continue to be based out of the New York office. Stewart left the company to pursue "opportunities in the digital infrastructure area".

Brookfield AM

Mark Carney – former governor of the Bank of England – joined Brookfield Asset Management as vice chair and head of ESG. He is running an impact investment fund and is charged with expanding Brookfield's ESG investing.

Mott MacDonald

Kate Mackay was promoted by Mott MacDonald to practice leader for transport planning in Australia, based in Brisbane. She focuses on developing the transport planning practice and driving innovation and technical excellence. Mackay joined Mott's in 2017, overseeing projects for the Department of Transport in Western Australia.

Mainstream

Mainstream Renewable Power in late August appointed the company's chief financial officer – Mary Quaney – as its new chief executive. She replaces outgoing chief exec and previous head of offshore, Andy Kinsella, and will be based in Dublin. Quaney is a tax and compliance expert and joined Mainstream in 2009.

Mary Quaney



Stonepeak

Stonepeak Infrastructure Partners recruited a seasoned renewables executive from a European infra fund in New York. William Demas had been an associate partner at Copenhagen Infrastructure Partners. The move reunites him with former Macquarie colleagues Michael Allison and Hajir Naghdy.

Curtis

US law firm Curtis hired Paul Buggingo as a partner based at its Dubai office from rival Simmons & Simmons where he was co-chair of its Africa department. He brings more than 20 years' experience working on energy and infrastructure projects in Sub-Saharan Africa.

Paul Buggingo



Pantheon

Pantheon named partner Rob Barr head of investor relations for EMEA in a newly-created role, reflecting its expanded coverage of European and Middle East client markets. Barr, who has worked for Pantheon since 2005, is responsible for IR across EMEA and distribution relationships in France, Italy, Spain and the Middle East.

APA Group

Australian gas networks operator and power producer APA Group named Adam Watson as its new CFO in August, joining in November to replace retiring CFO Peter Fredericson. Watson was CFO of Australian toll roads operator Transurban since 2014.

TAQA

Abu Dhabi National Energy Company (TAQA) in August appointed Afif Saif Al Yafei as chief executive of its newly-acquired Abu Dhabi Transmission and Despatch Company (TRANSCO). He joined from the National Central Cooling Company (Tabreed) where he held several leading roles.

IDB Invest

Silvana Bianco joined IDB Invest's infrastructure and energy team from a South America-focused role at ABN Amro. She started at the DFI in August after a long career in commercial banking, most recently working for 4 years at ABN Amro in Brazil.

Green Investment Group

Macquarie's GIG in August appointed 3 new executives – David Viner, Chris Morrison and Ole Bigum Nielsen – to head divisions within the group. Viner is head of GIG's green impact advisory team; Morrison leads the distributed energy and energy technology activities; while Bigum Nielsen was appointed to lead the business' asset creation and management team.

MUFG

Rob Ward was promoted to head of project finance and head of ESG finance for the Oceania region at MUFG Bank. In taking lead on ESG component, Ward assumes a new role for the bank in this region. Dave Roberts stepped into his former role as head of advisory.

Rob Ward



Johnson Winter & Slattery

Nicholas Grambas left Sidley Austin where he had been global head of infra and PF in Singapore and New York – to join mid-tier Australian law firm Johnson Winter & Slattery in Melbourne. JWS is a corporate law firm with 65 partners across Australia and has ambitions to build a presence in the infra space.

Nicholas Grambas



Globeleq

Africa-focused power developer Globeleq promoted MD Jonathan Hoffman to the newly established role of chief development officer. Hoffman will operate out of Cape Town, South Africa.

MIDIS

Two MIDIS team members resigned in August. MD Adam Larkin exited from the London office alongside Sunil Malhotra, VP in the New York office. Larkin since cropped up as a principal at Global Infrastructure Partners.

AIIM

South African infra fund manager AIIM made Hlompho Vuyo Ntoi and Sola Lawson joint MDs, following the impending retirement of chief executive Jurie Swart. Ntoi will be based in Cape Town, South Africa, and Lawson in Lagos, Nigeria. Swart was CEO from 2014 but recently decided to take early retirement.

Promotion of the quarter – **Patrick Trears**

AMP Capital's infra debt supremo Patrick Trears sits down for a fireside chat with One Search chief executive **Dan McCarthy**, to talk about the challenge ahead...

DM: Congratulations on your promotion! What do you think have been the driving factors in the success of your platform to date?

PT: Thanks Dan! The cornerstone of any business is focusing on its clients and people. We have worked hard to ensure that our clients receive a value-add product through our work, while also encouraging a team that has one culture with shared insights. It's been a lot of hard work over the years and continues to challenge me every day which makes it interesting.

DM: What would you say to LPs looking to make their first foray into the infra asset class?

PT: Many LPs are focused on protecting the downside through creative deal structuring, while also looking for a consistent cash yield. They can achieve this balance in infrastructure debt – if they work with the right manager of course!



DM: What differentiates AMP Capital's infra debt strategy from that of other infra debt GPs in the market?

PT: One of the key aspects of our strategy is our ability to structure and originate

bespoke opportunities. We have also been on the forefront of the digital infrastructure asset class, building a strong portfolio of digital investments over several years. We have been able to identify trends in the market and build a really strong investment thesis around these trends. I spend a lot of my time exploring emerging themes and sounding out the next trends in infrastructure. This is super interesting and we need to be pushing ourselves to innovate.

DM: What's the future for your platform? Can you give us a sneak preview into what you see in the market in the short to medium term?

PT: Continuing our growth across the infrastructure sector is my focus. We are exploring strategies that deliver the solutions our clients are looking for, and we are building the team in New York and London as we look to next chapter of growth for our business.

SMBC

UK-based SMBC head of energy and natural resources Laughlan Waterston in early September switched roles with Tom Waterhouse, head of corporate and PF for the Middle East Division. The leadership shake-up sees Waterston relocate to Dubai and Waterhouse move to the London office.

Neoen

French renewables developer Neoen hired Yves-Eric Francois as its new CFO for Australia, starting July, from Eiffage Infrastructures where he was CFO based in Paris. Francois has worked within the Eiffage group since 2007, starting with Eiffage Concessions in PF before becoming the division's CFO. He then transitioned to Eiffage Métal as CFO in 2014, before going to Eiffage Infrastructures in 2015.

AMEA Power

Dubai-based renewables developer AMEA Power appointed Jean Rappe as chief executive, Stefano Terranova as CFO and CIO, and Donato Sasso as director for delivery and execution. Rappe joins from Engie where he was chief exec of its solar division in Paris; Terranova was also at Engie where he had been based in Milan; and Sasso joined from Alcazar Energy where he was a project execution manager for Jordan.

Berenberg

Torsten Heidemann was appointed head of infra and energy at Joh Berenberg Gossler & Co based in Hamburg, Germany. He will oversee junior/mezzanine debt investments for infra and renewable energy projects across OECD countries through Berenberg's several debt funds.

Siemens Gamesa

Jorge Magalhães joined Siemens Gamesa as CTO to head its onshore business unit out of Porto, Portugal. Magalhães previously held a post as head of technology in the wind industry, most recently as head of innovation at Vestas – a position he held for 10 years.



Energy Estates

Australia-based advisory and accelerator Energy Estates – set up by former Norton Rose Fulbright partners Simon Currie and Vincent Dwyer – moved into the European market with the hire of Peter Conway in London. Conway has worked in finance, energy and utilities development for 25 years and will build out the company's green hydrogen and Power to X offering and pipeline.

Peter Conway



Amber Infrastructure

Amber Infrastructure named Vaughan Wallace as head of Asia Pacific, based in Sydney. He joins from infra investor Capella Capital in Sydney where he was head of origination. Wallace will take a leading role in developing the investment pipeline for existing and future mandates.

JERA Americas

Steven Winn was promoted to chief executive of JERA Americas, stepping up from his previous role of chief development officer. Winn started the new role in August and he will continue to operate out of the Houston Office. Before working at JERA, Winn was president of Winn & Associates for 5 years.

WSP USA

Denise Turner Roth replaced John Porcari as president of US advisory services at WSP USA. She takes up the role having been chief development officer of WSP USA since 2018. Porcari's tenure ran from 2014 and he has taken on a different role in US national policy. Roth's promotion returns her to advisory services, which she joined in 2017 as a senior adviser.

Masdar

Bruce Johnson left his post as senior VP at Mubadala to join its Abu Dhabi-based renewable energy development arm – Masdar – in August as associate director for structured finance, treasury and insurance. He previously worked for the state-owned company for 6 years.

IFC

Naoll Mary joined the International Finance Corporation as senior operations officer in the upstream team. He specialises in water and environment infrastructure P3 transactions and will be based out of the Washington DC office, moving there from Dubai where he had been at Metito.

Natixis

Nicolas Namias was named as the replacement for exiting Natixis chief executive François Riahi who has held the post for just 2 years. Namias – a board member of parent company BPCE – worked at Natixis from 2014-15 first as a director of strategy and then as head of finances. The reason for Riahi's departure was over "strategic divergences concerning options for roadmap".

Victoria Government

Nick Foa started in the summer as head of transport services in the Department of Transport for Victoria, Australia, replacing Jeroen Weimar who held the role for one year. Foa had been the inaugural chief executive of the Suburban Rail Loop Authority (SRLA) since September 2019.

Nick Foa



OX2

Russell Dallas, former Mott MacDonald London-based global practice lead of infra and PF, joined renewable energy company OX2 as a commercial director in Gamla Stan, Sweden, after a year-long planned career break. Established in 2004, OX2 takes lead in the production of large-scale onshore wind and in the last 15 years has delivered more than 2GW in the Nordic region.

Russell Dallas



Turner & Townsend

Anooj Oodit was promoted to MD for Asia Pacific (including Australia and New Zealand) at construction consultancy Turner & Townsend. He replaces former Asia MD Duncan Stone who announced his retirement after 31 years with the firm.

Mott MacDonald

Salima Rheemtulla joined Mott MacDonald as infrastructure advisory leader in Victoria, Australia. She is technical director and joined in July having left EY in May after 8 months with the firm. Prior to EY, she worked for Aurecon in Melbourne for 7.5 years in infra advisory, rising to the position of manager.

Pi Capital

Financial advisory house Pi Capital hired Susana Vivares as its builds out a new renewables and sustainable infra unit. Vivares is best known in these circles from her 13 years at WestLB where she co-led the EMEA energy and structured finance group in London. She joined New York-based Pi Capital in June as managing director.

UK Government

The UK's Infrastructure and Projects Authority appointed Jon Loveday as the director of infrastructure, enterprise and growth. He has more than 30 years' experience in the infra sector and started in August overseeing the government's portfolio of projects and spearhead the agenda to decarbonise the economy.

Deutsche Bank

Alvaro Utrera started in July as VP of structured finance for global credit trading at Deutsche Bank, operating out of Madrid. Utrera was previously head of EMEA energy, PPP and alternative infra at Fitch Ratings which he joined in 2018, overseeing new ratings of infra and PF transactions across EMEA.

Alvaro Utrera



Herbert Smith Freehills

HSF in July made London-based Gavin Williams and Sydney-based David Ryan joint leads of the law firm's global infra team. Both have around 20 years' experience in the infra sector and they replace London-based partner Patrick Mitchell who held the position for 6 years (2014-20).

JAG Energy

Kotaro Shinra, a 21-year MUFG Bank veteran, took on the role of CFO at Japan Asia Group renewables subsidiary JAG Energy, based in Tokyo. He held many roles at MUFG, including MD of venture capital at Mitsubishi UFJ Capital and MD of global corporate banking and investment banking strategy. He will lead finance and strategic initiatives at JAG Energy.

Arcus Infrastructure Partners

Feriel Feghoul in July joined Arcus Infrastructure Partners as senior investment director in London, joining from Wren House where she was a director with a focus on transport origination and asset management. Before that she worked in Montreal for PSP Investments. This hire brings the Arcus team to 28, having in March appointed Jordan Cott to partner.

Feriel Feghoul



SMBC

SMBC promoted Juan Kreutz to general manager for North America, having been MD and head of PF in North America. Kreutz is based out of the New York office and oversees the US private placement and municipal finance groups. He joined SMBC from BBVA in 2014.

Bluefield Partners

Baiju Devani joined Bluefield Partners as investment director in London, managing the solar fund – Bluefield Solar Income Fund, a listed vehicle investing in UK solar PV assets during construction and operational phases. Devani joined from Ingenious where he was fund manager for the infrastructure division, responsible for the sourcing, valuation, acquisition and asset management of wind and solar assets.

Baiju Devani



DFC

Brian Gilmore joined the US government's development finance arm DFC (formerly OPIC) as a director in Washington DC, leaving his role as senior VP at EIG Global Energy Partners where he had been since 2002. At EIG he was responsible for origination, evaluation, negotiation and acquisition of energy and infra investments globally.

iCON Infrastructure

Pierre Nicoli joined iCON Infrastructure as a senior adviser in France from Banco Santander where he had been global head of infra M&A in Madrid since April 2018. Prior to that, he was head of energy and infra at CBRE UK, heading up the M&A, debt advisory and consulting divisions for EMEA, but is best known for his 11 years at BNP Paribas.

Skanska

Jonathan Willcock is from October to lead Skanska UK's infrastructure business as MD, joining from Alstom where he served as integrated transport system specialist, leading the systems, signalling and infrastructure business for around 7 years.

Jonathan Willcock



Trafigura

Vasco Bouça Vitorio, former director of project and export finance at HSBC, joined commodity trading company Trafigura as project finance manager in Geneva. Trafigura (HQ Singapore) is an employee-owned logistics company that trades primarily in base metals and energy and has offices in 41 countries.

Barros & Errázuriz

Chilean law firm Barros & Errázuriz promoted 2 senior associates to partner, boosting its financing and infrastructure and M&A corporate practices. Enrique Barros is on the financing and infra team in Santiago. Vicente Cordero is a member of the M&A and corporate practice in New York.

KPMG

Michele Connolly, was in July made EMEA head for global infrastructure at KPMG. The Dublin-based partner is primarily focused on infra financing, banking negotiation support, loan sales, fundraising for debt and equity as well as traditional M&A. She joins KPMG's senior infra leadership alongside Richard Threlfall, Stephen Beatty, Sharad Somani.



Asian Development Bank

Ashok Lavasa started mid-July at the ADB as VP for private sector operations and PPP, taking over from Diwakar Gupta whose term ended on 31 August. Lavasa had been election commissioner for India, before that serving as union finance secretary of India, union secretary for the ministry of environment, forests, and climate change, and union secretary for the ministry of civil aviation.

IFC

Mehdi El Alaoui exited Credit Agricole to join the IFC as an EMEA investment officer, based in Morocco. He has more than a decade of experience in the sector, most recently serving as EMEA infra and PF director at CA CIB, having joined the company in 2009 as an assistant in Paris.

Burns & McDonnell

Zoe Dempsey in July joined Burns & McDonnell as BD director, based out of the UK HQ in Birmingham, supporting the group's growth in the energy market. She was previously head of account and bid management at Energy Systems Catapult (2018-20) and before that head of sales and marketing at Key Forensic Services (2006-18).



Macquarie

Josh Presner in the summer joined the infra/energy team at Macquarie Capital's Green Investment Group in New York having been an associate and then VP at Deutsche Bank. He is responsible for origination, structuring and execution of Macquarie's principal equity investments in North America.

Moody's Investor Services

Well-known European infra figure Andrew Davison retired mid-July after a long career in the sector, having spent the last 14 years of it at Moody's where he rose to senior VP level, playing a leading role in the rating agency's ESG practice. Prior to Moody's he was a director in the energy group at Scotia Capital for 3 years.



HarbourVest Partners

Diego Jimenez in July joined HarbourVest Partners as principal, based in London. He previously worked at John Laing where he was an investment director establishing its Latin America strategy. Prior to that Jimenez was an infra portfolio manager at APG Asset Management in the Netherlands.



Norfund

Simbah Mutasa was in July appointed Norfund regional director, based out of the South African office in Cape Town. Mutasa's move follows a second stint at Citi where he was based at Johannesburg for 5 years, working as a VP and then director of investment banking.

Vattenfall

Magnus Hall announced his departure this summer from his role as president and chief executive of Vattenfall. He exists at the end of January 2021 and the board has launched a recruitment process for his replacement. Hall is currently chair of specialist transport equipment group NTM and president of European electricity industry association Eurelectric.



Financial Closes

the interesting bits

IJGlobal editorial director **Angus Leslie Melville** turns the focus on a slew of interesting financial closes from the last three challenging months that were heftily impacted by coronavirus...

As the coronavirus pandemic settled in around the globe, few people took a positive view of the market and the likelihood of deals making it over the line. All things considered, it's fair to say we all got it wrong.

The resilience of the infrastructure and energy community took most observers aback as key deals were kept on track to achieve a flow that – while it won't break records – kept the (very real) wolf from the (virtual) door.

Europe witnessed a healthy (given the situation) spread of closes – largely – across renewable energy as more traditional infrastructure sectors stalled with the loss of political support in lockdown.

One particularly interesting European deal was Northvolt's \$1.6 billion debt package arranged by a team of commercial banks, pension funds and public financial institutions to deliver 2 lithium-ion battery cell gigafactories in Sweden.

This development is designed to break Asia's stranglehold on production and was supported with guarantees from Euler Hermes, Nippon Export and Investment Insurance (NEXI) and BPI France.

Looking further afield and picking out a trio of interesting renewable energy deals, the scene (in the last 3 months) was dominated by onshore wind farms and solar parks in established markets like Spain (bad days firmly in the rear-view mirror) as well as Finland and Lithuania.

Fotowatio Renewable Ventures (FRV) in early September reached financial close on the 138MW San Serván solar plant in Extremadura, Spain. The Abdul Latif Jameel Energy subsidiary secured €64 million (\$76m) in project financing from Natixis, with the French bank acting as underwriter and sole green loan coordinator.

Helen and CPC Finland reached financial close in late August on the 96MW

Lakiakangas 3 onshore wind farm in Ostrobothnia, Finland. The €100 million project financing was arranged by OP Corporate Bank (not a frequent flyer on the *IJGlobal* database) for the facility in the municipalities of Kristiinankaupunki and Isojoki.

And then in Lithuania, mid-August saw E Energija close the 68.9MW Telšiai onshore wind farm, located 250km north west of Vilnius. SEB arranged the €45 million debt with GE providing the turbines and locked into a 25-year agreement to provide O&M services.

Middle East

Looking to the Middle East, it once again has gone all-out to prove that the region can keep things moving no matter what's going on locally, or globally. They really do know how to keep the kettle boiling when the heat is low.



Possibly the best example of this is Umm al Hayman wastewater PPP in Kuwait that made it to financial close in late July – the second PPP to close in the kingdom since 2008.

Kuwait has had a troubled history in the delivery of infrastructure through PPPs and for this \$1.6 billion deal to close at an 80:20 gearing in the midst (hopefully) of the Covid-19 pandemic, speaks to the government's commitment... not to mention the staying power of the WTE-led consortium and its lending team.

Bringing it back to renewables, the \$467 million 800MW Al Kharsaah solar IPP 80km west of Doha, Qatar, briefly held the crown for setting the lowest solar tariff... a curious competition played out across the region as nations play a game of one-downmanship.

Stepping away from alternative energy again, Saudi Arabia was particularly pleased in early September to see a Marafiq-led consortium reach financial close on the \$250 million Jeddah Airport 2 independent sewage treatment plant (ISTP). It was pretty much ready for FC last July (2019) but delays – including the Covid-19 pandemic – pushed it back considerably.

Across The Pond

When you swing around by the Americas, possibly the most impactful deal to have closed in the last 3 months has to be the primary financing of Competitive Power Ventures' Three Rivers CCGT in Illinois.



This was the culmination of more than a year's work, having suffered setbacks that ranged from coronavirus through to political issues surrounding the capacity market in the PJM Interconnection region... and all that while the owner had it on the auction block.

Sticking with gas-fired, Canada logged the rare greenfield financing for a CCGT plant in Alberta with the Cascade project led by joint sponsors Macquarie Capital,

The other growing sector has to be data centres and there's not much happens in the digital infrastructure space that's not interesting.

KinetiCor Resource Corp and OPTrust. They concluded the process towards the end of August to deliver the 900MW facility near Edson, arranging almost C\$1 billion in debt and bringing in 2 additional equity partners.

On the equity side, infrastructure fund managers DIF Capital Partners and Axiom Infrastructure took stakes in the C\$1.5 billion greenfield plant, while the construction loan closed at C\$910 million.

Meanwhile – outside of the energy space – the other growing sector has to be data centres and there's not much happens in the digital infrastructure space that's not interesting.

Aligned, the data centre operator, in mid-September closed its \$1 billion sustainability-linked debt financing, marking a first for data centres with a green finance tool that is growing in popularity.

Similar loans have already been used by borrowers in other industries, with regulated utilities, independent power producers and airport operators all getting in on the action, but Aligned is the first company of its kind to sign such a deal. Like green bonds, sustainability-linked loans appeal to lenders that have mandates to grow their responsible investing portfolios with trades that meet ESG criteria.

And then looking south (quite a long way south), you have Mainstream Renewable Power's financing for the 630MW Huemul phase of the 1.3GW Andes Renovables portfolio in Chile. This deal was a long time in the making and it came as something of a relief on the last day of August to be able to report that the \$620 million, 19-year debt package had closed with 5 banks... 3 institutions having dropped out.

APAC region

When looking across the APAC region there is a deal that reached financial close in a sector that will always grab the headlines (in fact we have a feature on the subject deeper in the magazine) and that is floating solar.

DBS Bank signed a S\$40 million (\$29.3m) loan to Sembcorp Industries for the 60MWp Tengoh Reservoir floating solar project in western Singapore. The floating solar park covers 24 hectares and work started on it in August.

It is scheduled for completion and operations before the start of next year (2021) and will be used to power the reservoir's water treatment facilities, eliminating 28,000 tonnes of carbon dioxide emissions annually.



Meanwhile in Kazakhstan, the DFI-backed Almaty Ring Road PPP was Central Asia's first proper PPP to reach financial close. The \$742.6 million road PPP saw the DFI lenders design a "bespoke installment sale structure" (as described by an adviser) to meet Islamic Development Bank's specific Shariah requirements. The sponsor, a Turkey-South Korea consortium, is symbolic of the ring road's place in the transcontinental highway linking Eastern Europe with Northeast Asia.



Another interesting deal in the region was the Columboola 203MWdc (162MWac) solar farm in Queensland which saw South Korea's Hana Financial Investment finally take the plunge and enter the Australian market.

It is the first overseas greenfield project to be developed by the Korean investor and it has a total value of A\$320 million (\$229.6m) – A\$200 million being raised from commercial banks and A\$120 million brought in as equity / mezzanine debt.



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US Renewables and Power – business as usual

IJGlobal Americas Editor **Ila Patel** talks to ING's Thomas Cantello and Ana Carolina Oliveira about the rocky road to stability for power and renewable energy in the US...

At the start of 2020, the US power and renewables market had a strong pipeline of projects with newer sectors providing robust investment opportunities. Covid-19 caused major disruption to the financial markets, impacting several deals and driving pricing up. Fast-forward to Q4 2020 and there is light at the end of the tunnel with the market returning – almost – to normal.

The US federal government's \$483 billion stimulus package approved in April went a long way in providing some stability to financial markets – and banks are now playing catch-up after a few months of sitting on the side-lines.

ING's US power and renewable energy team typically closes around 20-30 deals a year. Thomas Cantello, managing director and co-head of renewables and power, believes this year is no different: "I don't think the renewables and power financing and development markets were significantly impacted other than the initial shock."

"During the peak of the pandemic, some of the projects we were already engaged in closed. We have closed five deals in the past month. Of course there was some impact on pricing and deals were cancelled but we remain bullish and expect plenty of deal activity this year."

Businesses have begun to adjust their expectations in response to the pandemic but the underlying fundamentals of the

market – the demand for renewable power, low interest rates, and cutting costs for renewables projects – will continue.

"Currently, we have a very supportive state-level regulatory regime for renewable power and that will stay in place. All the fundamentals are in place for a strong 2021 and beyond," says Cantello.

According to the US Energy Information Administration (EIA) "renewable energy will be the fastest-growing source of electricity generation in 2020, the effects of the economic slowdown related to Covid-19 are likely to affect new generating capacity builds during the next few months".

Covid and going green

Sustainable financing instruments are attractive to investors worldwide and come in the form of green bonds, social bonds, sustainability bonds, climate bonds and loans.

Sustainable finance is a key part of ING's strategy and renewable energy is a key element of it.

Ana Carolina Oliveira, head of sustainable finance for the Americas, says the bank supports the financing of renewable energy and also supports companies through the incorporation of sustainability into the financing, where renewable energy is a common indicator.

She says: "Renewable energy can be instrumental to corporates that want to use green financing but do not necessarily have the business model or the technology available to be green."

Oliveira believes that 2019 was a record year for sustainable financing with \$550 billion in total issuances. "Green bonds made up 50% of the total \$550 billion issuance for 2019," she says. "When Covid hit, we did see a drop in the volume of green bonds and green loans in March and April but volumes are rebounding."

In August, Moody's forecasted that the total sustainable bond issuance in 2020 could reach \$325 billion to \$375 billion.

"With the increased attention from investors and companies trying to improve

Thomas Cantello



"All the fundamentals are in place for a strong 2021 and beyond."

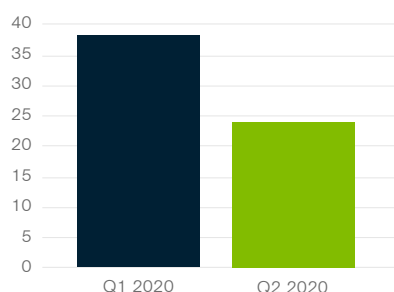
and disclose their sustainability goals, we now see them trying to tack on green bonds or sustainability-linked facilities where they are setting targets to become more green with, for example, commitments to use 100% energy from renewable sources," says Oliveira.

Regulatory landscape and upcoming elections

There is strong support from the federal government for renewable project development with two key pieces of legislation that have been in place for many years, the Production Tax Credit (PTC) and the Investment Tax Credit (ITC).

PTC provides a tax credit of 1-2¢ per kilowatt-hour for the first 10 years of electricity generation for utility-scale wind and ITC provides a credit for 12% to 30% of investment costs at the start of the project, particularly for the offshore wind and utility-scale and distributed solar sectors. Both were extended in 2019 but PTC has only been extended until the end of 2020.

Pipeline deals in the US renewables and power market



Source: IJGlobal

Cantello says: "PTC has been around for years and usually gets extended but it is coming to an end. ITC will start stepping down this year over the next 3 years before completely disappearing. If they are not extended, it may hurt the on-going development of renewable energy projects. There is the possibility that after the elections in November, if Joe Biden and the Democrats are in charge then an extension will be provided."

Trade policies in the US have been implemented haphazardly under the Trump regime with a number of tariffs put in place for Chinese imports, such as solar modules. This has made projects more expensive to build in the US.

Cantello believes that if Biden is installed in the White House, many trade tariffs will be regulated with others disappearing.

"Other than PTC and trade policies, there is still enough support at the state-level and corporates who know that we need to be more sustainable and address the ongoing climate crisis," says Cantello. "They will continue to support the market. If there isn't a change during the election, I still believe that the renewables market will continue to grow given the strong support of both the states and the private sector."

Offshore wind in the US?

In 2016, the first commercial offshore wind project – the 30MW Block Island Wind Farm off the coast of Rhode Island – began operations. Since then, the US has not seen many new offshore projects built.

While several projects amounting to 30GW were announced thereafter, there has been a great deal of opposition to those and they are currently tied up in regulatory processes.

Cantello says: "European developers like Avangrid, Orsted and Eversource have active development projects in the US so there is enthusiasm but I don't think it will drive the overall renewable project financing market."

One project that is far advanced is the 800MW Vineyard Wind project off the East Coast. However, an environmental impact statement is currently underway and has halted the project. It is not expected to be completed until the end of the year.

"Many in the market thought the Vineyard Wind project would open the floodgates to more projects but it has moved a lot slower than the market anticipated. I do not think offshore wind will be a significant part of our market in the near future. That isn't to say some won't get built over time because there are several projects in various stages of development and construction," says Cantello.

"There is definitely a lot of support for offshore wind projects but I just don't think

Ana Carolina Oliveira



"Data centres will continue to demand more and more energy over time, and the pandemic will only accelerate the trend."

there is as large a need for it in the US as in Europe. We have a huge amount of land on which to develop wind farms so it begs the questions whether there is a need to build offshore given that it is more expensive."

Microgrids and distributed energy (Solar and storage)

The US is prone to hurricanes, floods, wildfires which cause power outages. This has emphasised the need for resilient renewable infrastructure. Utilities are

now turning their attention to microgrids (including solar and battery storage) and distributed energy systems to provide customers with flexibility, cost management and reliability.

"We financed a distributed microgrid battery storage project in 2019 in Los Angeles – to install batteries at 100 different sites including universities, hospitals, and corporate centres. They are expensive projects but have a stable revenue stream and the projects provide energy savings and resiliency the host sites as well as congestion relief to the grid during peak demand periods," says Cantello.

There has also been a great deal of interest in residential rooftop solar with customers requesting batteries so they are independent and have a reliable electricity stream in the event of blackouts.

Cantello says: "We are seeing huge growth in this market, especially with battery prices decreasing and solar panel prices coming down, it has become more competitive. California is a huge economy and renewables is a big market there. Of course it has its fair share of problems with blackouts and wildfires which has led to a surge in utility-scale battery storage projects with a number of projects underway."

ING is currently working on a few project financings that feature battery storage.

Data Centres and renewable energy

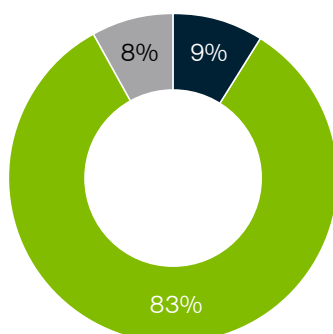
In the last few years, data centre providers have stepped up efforts to procure renewable energy sustainably to meet customer demands. European data centres have utilised renewable energy for a number of years but it is a relatively new phenomenon in the US, having only come into play from 2014 onwards.

Oliveira says that there has been a surge in data centres using green financing to finance their development which has led to more power purchase agreements (PPAs). "Data centres will continue to demand more and more energy over time, and the pandemic will only accelerate the trend – if investors are looking for a continually-growing sector, with falling costs – this is it."

The forecast for renewable energy remains a growth area for the foreseeable future buoyed by innovative, sustainable financial instruments and growing sub-sectors providing steady revenue streams. While we may not see a surge in operational projects in the offshore wind market, microgrids and battery storage projects will continue to attract investors and developers.

Projects that have been delayed due to the pandemic are expected to come online in 2021 as businesses continue to adapt to market conditions.

Pipeline deals in the US - solar and battery storage



Energy storage
Photovoltaic solar
Photovoltaic solar + energy storage

Source: IJGlobal

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Floatovoltaics: A portmanteau with pizzazz

From the world's first pilot system in Aichi, Japan, some 13 years ago to Maurbeni's 181MW project in western Taiwan that closed in April 2020 with a NT\$7.2 billion (\$239 million) debt package, it is not surprising Asia dominates the market for floating solar, or floatovoltaics. *IJGlobal* reporter **David Doré** explains.

High population density, coupled with the perennial challenges of land availability and long-lost titles, drive the growth of floatovoltaics in developed and emerging markets in Asia. Another reason is the opportunity cost of developing ground-mounted solar PV projects in countries with land scarcity.

"An Asian conglomerate with a successful record developing coal-fired power plants bought land to expand an existing power plant complex in Indonesia," a banker tells *IJGlobal*. The new tract would have been for 2GW of additional coal-fired power plants.

The banker adds: "The developer tried to solve the problem of land availability ahead of time. Now the Government of Indonesia doesn't want to develop coal anymore. That's fine and commendable. But for the same amount of land the developer can only install 100MW ground-mounted PV. That's 5% of the installed capacity of the coal-fired. No one talks about that little issue."

Killing the business case

The floatovoltaic industry (or *IJGlobal's* sources) classifies projects into 4 tiers in order of system complexity, based on the project's location:

- **tier 1** – water supply reservoirs or mine subsidence areas
- **tier 2** – hydropower dam reservoirs
- **tier 3** – nearshore or marine basins
- **tier 4** – offshore

Tier 1 normally has the lowest capital cost per MW and debt pricing while tier 4 has the highest. However, no 2 projects are the same and it depends on the project dynamics, as everyone in project finance loves to say.

Regulators, developers, financiers and advisers are grappling with floatovoltaic's technical risk and lack of standards across the tiers.

Asian Development Bank (ADB) senior energy specialist David Elzinga leads the bank's technical assistance on a

David Elzinga



"The dominant issue for financiers is the perceived technical risk, and by deploying pilots we are addressing this."



floatovoltaic programme in Afghanistan, Azerbaijan and Kyrgyzstan. "The dominant issue for financiers is the perceived technical risk, and by deploying pilots we are addressing this" he says.

Five local and international bidders submitted their proposals on the first 100kW pilot project in Azerbaijan, where more than 90% of power is from oil- and gas-fired power plants. Elzinga anticipates the government's selecting the preferred bidder this month (September 2020).

DNV GL is Singapore water agency PUB's technical adviser on the 60MWp Tengeh Reservoir floatovoltaic, and lenders' technical adviser on Masdar's 145MWp Cirata Dam floatovoltaic in Indonesia.

Sembcorp Industries in August 2020 had closed a S\$40 million (\$29.3 million) project finance loan from DBS for the former project. Société Générale, SMBC and Standard Chartered are to be lenders on the latter project, a deal watcher whispers, though the transaction is in due diligence and has yet to go before credit committees.

The Norwegian firm is facilitating a floatovoltaic industry group with 20 members across the value chain to develop standards in 5 areas – site conditions assessment, energy yield forecast, mooring & anchoring systems, floating structures, permitting and environmental impact – to increase the quality and reliability of floating PV installations, according to Silpa Babu of DNV GL.

Silpa Babu



"Too often, standards, codes and requirements are used that are not specific for floating solar but rather adapted from other industry fields, for example, offshore structures, building codes and ground-mounted solar," Babu comments. "This can lead to either too strict requirements – hence killing the business case – or too soft or irrelevant requirements, hence leading to increased risk of failures."

Learning as we go

Sources *IJGlobal* talked with agree that independent power producers and bankers lack reliable comparables of large-scale floatovoltaics to brief boards of directors and investment committees.

When Marubeni's 181MW Changhua Coastal Industrial Park floatovoltaic in Changbin Lunwei East, Taiwan, starts operations later this year (2020) – if it meets the commercial operations schedule – the project would (however briefly) be the world's largest floating solar.

Commercial lenders on the 6-year, non-recourse debt package were:

- Bank SinoPac
- DBS
- E Sun Commercial
- First Commercial
- KGI
- SMBC
- Société Générale

Kelvin Wong, a banker at DBS, remembers the novelty of the Taiwan project: "I was surprised when our adviser Mott MacDonald said they couldn't find relevant benchmarks anywhere in the world at the scale we were looking at."

Kelvin Wong



The DBS managing director of project finance adds: "The lack of benchmarks on construction costs, warranties and O&M costs, in particular, put some international banks off."

"This new asset class doesn't have a long-term track record yet," Société Générale managing director Daniel Mallo tells *IJGlobal*. "Long-term costs, performance and cash flows have yet to be fully validated. There are expectations and assumptions about the economic and environmental benefits of higher energy yield, reduced evaporation and improved

water quality. But the evidence is not yet in for large-scale projects and for longer periods of time. It's not dissimilar to what happened a dozen or so years ago with the ground-mounted solar asset class. We tend to also learn as we go."

Daniel Mallo



"The evidence is not yet in for large-scale projects and for longer periods of time."

Market insiders underscore that the project financing of the floatovoltaics subsector, though a relatively new technology, still competes for liquidity in the project finance market.

The debt-to-equity ratio and tenor are "not so different from what you see in the market," says a Singapore-based banker. The tenor on the Taiwan deal was 6 years. This length was not due to the subsector's novelty but because that is the "sweet spot for local lenders and it's more customary to do medium-term and refinance in year 4 or 5 in that particular market", according to SocGen's Mallo. Bankers anticipate a long-term tenor on Cirata in Indonesia, as only international lenders with appetites for long tenors are on the deal.

While sources were reluctant to confirm a specific debt-pricing premium over other solar PVs, "in a year or two that premium will go away", predicts Wong.

An early mover's fall back is to structure and finance floatovoltaics as they would ground-mounted PV projects.

"The financial model getting through to financial close is not going to be significantly different for a ground-mounted versus a floating versus a concentrator – or any other PV," remarks Brett Crockett, director of energy and infrastructure at modelling specialist Mazars. "It's all pretty similar."

Brett Crockett



"The financial model getting through to financial close is not going to be significantly different for a ground-mounted versus a floating versus a concentrator – or any other PV."

Obviously, decision-makers are approving the financing of the large-scale projects.

"Though there are not many comparables, there are ways to get comfortable with these projects," a banker experienced in floatovoltaics confides to *IJGlobal*. "Technical due diligence may take longer than other PVs but it's well worth it. A solid sponsor is crucial with the financial and technical bandwidth to take care of these more innovative structures and keep on top of the operations and maintenance contractor."

The project finance veteran adds: "A strong risk mitigation plan is critical, requiring cash-flow buffers and co-financing with other early-mover banks helps settle nerves."

Mallo stresses the sizing of the debt, including beefing up contingencies, and running sensitivity analyses on the projected cash flows to allay concerns by credit committee members.

Marching through the fog of war

Market participants emphasise several ways to accelerate the uptake of floating solar. These include designing a regulatory framework, mapping a pipeline of potential floatovoltaic IPP projects and agreeing on industry standards. The overarching theme among the recommendations is enhanced visibility.

"We need governments, complemented by dialogue with industry, to establish a sensible regulatory framework not just for renewables but for the power sector, in general," says Cindy Cisneros-Tiangco, ADB principal energy specialist. Elzinga's predecessor on the Central and West Asia floatovoltaics programme has shifted to the bank's Pacific department, where she works with small island states to deploy larger scale floatovoltaic projects.

"Tonga is at the forefront of involving the private sector in ground-mounted solar," Cisneros-Tiangco tells *IJGlobal*. "Nearshore and marine floating solar is a good fit for the Pacific Islands and could become the game-changer for these markets. We expect energy storage to play an increasingly important role to address uncertainty around grid absorption to attract more private sector investments."

Implementing agencies could also take a programmatic approach to floatovoltaics by working with advisers to develop a list of water bodies that are suitable for the subsector.

Cindy Cisneros-Tiangco



"Private sector would then have visibility into the pipeline of projects in each market," says Wong at DBS.

The Dutch Water Authorities, or Unie van Waterschappen, have identified many sites for floating solar, and India's Ministry of New

and Renewable Energy has conducted feasibility studies, prioritising some reservoirs, according to DNV GL's Babu.

Indonesia is considering plans for installing floating solar PV on a further 60 reservoirs, while the Electricity Generating Authority of Thailand (EGAT) has a floatovoltaics programme that stretches into 2037.

A Thai-Chinese consortium of B Grimm Power and Energy China had signed in January (2020) a contract with EGAT to develop the Bt1.87 billion (\$60 million) Sirindhorn Dam floatovoltaic in Ubon Ratchathani province – the first of 16 planned projects with a total of 2,725MW of generation capacity across 9 dam reservoirs.

The joint floatovoltaic industry project anticipates releasing its draft guideline for industry consultation at the end of January 2021, with the final recommended practice guidance published 1 or 2 months later. The consortium recently welcomed 2 Asia-headquartered members: QuantSolar in India and Sun Rise E&T in Taiwan. The project would welcome a PV module supplier.

"It is in the interest of bankers to finance and invest in performing and long-lasting FPV projects, which will not sink or catch fire after 5-10 years of operation or after a mild gust of wind," DNV GL's head of section for solar in India emphasises. "It is also interesting to see the approaches of different participants and how there is a real mismatch between sound engineering practices for FPV and what is normally asked as a requirement for FPV projects."

EGAT plans 2,725MW of floating solar staggered to 2037

	Scheduled Commercial Operations Date																	
Floatovoltaic asset (MW)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Sirindhorn Dam	45																	
Ubol Ratana Dam			24															
Bhumibol Dam 1							158											
Srinagarind Dam 1							140											
Vajiralongkorn Dam 1							50											
Srinagarind Dam 2								280										
Bhumibol Dam 2									300									
Vajiralongkorn Dam 2										250								
Srinagarind Dam 3											300							
Chulabhorn Dam												40						
Bang Lang Dam													78					
Bhumibol Dam 3														320				
Rajaprabha Dam 1															140			
Sirikit Dam 1																325		
Rajaprabha Dam 2																	100	
Sirikit Dam 2																		175
Total by year	45	0	0	24	0	0	298	50	0	280	300	250	300	438	140	325	100	175

Source: *IJGlobal*

The future of renewables in MENA

IJGlobal reporter **James Hebert** trawls the Middle East and North Africa to analyse market appetite for renewable energy, revealing it remains lively...

Six months after the World Health Organisation's announcement of a pandemic, the MENA market has soldiered on with a number of huge projects hurdling the economic difficulties produced by the Covid-19 pandemic to reach financial close – including three more in just the first week of September 2020.

However, the rumblings that could be felt in a mysterious land further west – i.e. Portugal – have revealed that MENA is no longer home to the world record tariff for solar PV, despite new projects in Abu Dhabi and Qatar setting new records this summer (late July 2020.)

The Portuguese Directorate General for Energy & Geology announced on 27 August that its 670MW solar tender drew a bid as low as \$0.0131 per kilowatt hour which now holds the record, albeit in an aspirational context, which nonetheless beats the \$0.0135 tariff offered by EDF/Jinko Power for the 2GW Al Dhafra... which is also aspirational at this stage.

Nonetheless, how can the MENA market respond to this latest challenge? Or to broaden the question further, what lies in store for the renewables sector in the region?

IJGlobal spoke to developers, advisers, and bankers about what opportunities they foresee and anticipate the most in MENA renewables in the coming 'post-Covid' – or perhaps even the 'with-Covid' – era.

Developers

Perhaps unsurprisingly at the top of the list is Saudi Arabia and its NREP headed by the Renewable Energy Project Development Office (REPDO) which is still working through its second round but nonetheless has 1.2GW of solar ready to be bid on in the third round – split between categories A and B.

B is the much larger of the two – comprising 1GW of solar PV – and consisting two projects:

- 700MW Ar Rass
- 300MW Saad



REPDO issued the RFP documents for NREP R3 at various points in April (2020) and structured its indicative schedule around the disruption of the pandemic which at this point of the year was pushing many ongoing tenders back. However, such is the scale of the pandemic that REPDO recently added yet more bidding time for its third round – the RFPs for Ar Rass and Saad projects are now due on 9 December.

Elsewhere up to nine developer consortia bid on a 755MW solar PV programme in Iraq on 1 September which was re-tendered following its initial launch in May 2019.

These are:

- 300MW Karbala solar PV – Karbala Province
- 225MW Iskandariya solar pv – Babil Province
- 50MW Jissan solar PV – Wassit Province
- 50MW Al Diwania solar PV – Diwania Province
- 30MW Sawa-1 solar PV – Muthana Province
- 50MW Sawa-2 solar PV – Muthana Province
- 50MW Khidhir solar PV – Muthana Province

A spokesman for Iraq's Ministry of Electricity told the state-run Iraqi News Agency in June that the 755MW tender was put to one side due to the pandemic but was subsequently

"We spent a lot of time, money, and bid bond on the bid. All gone to waste."

re-issued to the market. The bids submitted on 1 September are thought to be between \$0.04 and \$0.08 per kilowatt hour.

A similar story comes from Kuwait where the KD530 million (\$1.7 billion), 1.5GW Al-Dibdibah solar PV project is to be re-tendered as an independent power producer (IPP) which was announced a week after its cancellation by the Kuwaiti Council of Ministers on 13 July despite the receipt of seven bids. The tender scrapping was blamed on the pandemic... however the decision also enabled the switch to the IPP format, which will mean the prospective developer will be expected to raise the project financing as well as O&M the asset when it is up and running.

KAPP will replace Kuwait National Petroleum Corporation (KNPC) as the implementing authority on the tender and will also be mandating a new advisory team. The RFQ stage is expected to be initiated in Q1 2021.

Oman has also had some issues at the political level affecting its procurement drive due to the pandemic – its PPP unit was folded into the Ministry of Finance last month, after just a year of existence. Nonetheless, there are hopes that this will not disaffect the Oman Power & Water Procurement Company (OPWP) and its 1GW+ solar programme which has nine prequalified consortia coveting the following projects:

- 500-600MW Manah Solar I IPP
- 500-600MW Manah Solar II IPP

Each project will be awarded to separate consortia and, much like on the latest Saudi NREP round, an extra-long period of bidding time was given to reflect the disruption of the pandemic – RFP bids are due 7 December.

400MW Noor PV II multi-site solar



Advisers

The original advisory team for the 1.5GW Al-Dibdibah in Kuwait was not dismissed without controversy, as a source on the team told *IJGlobal* at the time: "We spent a lot of time, money, and bid bond on the bid. All gone to waste." The episode provided a fresh reminder of the difficulty of getting projects off the ground in Kuwait, where just two PPPs have reached financial close since 2008 – the most recent being the Umm al Hayman wastewater PPP in late July.

Nonetheless, a sufficient amount of time has now passed and the Kuwaiti solar PV is once again drawing interest from other consultancy firms. *IJGlobal* also asked around in the market for other upcoming renewables with advisory roles to be filled over the coming months.

Emirates Water and Electric Company (EWEC) is understood to have yet to issue the RFP for the transaction advisory for a 1.5GW solar scheme in Abu Dhabi – the third such major IPP after the 2GW Al Dhafra solar IPP and 1GW+ Sweihan solar IPP.

Meanwhile additional opportunities await in North Africa – the Moroccan Agency for Sustainably Energy (Masen) invited expressions of interest from developers for the first phase of its 400MW Noor PV II multi-site solar programme in February, just a month before the start of the pandemic. The programme has been slowed down for obvious reasons and has long since missed its anticipated RFP launch target of Q2 2020, but nevertheless it is understood that an advisory team has yet to be appointed by Masen.

The sites selected by Masen for Noor PV II include:

"I think banks are more stable but only the stable projects will attract robust market appetite."

- Bejaad
- Boujdour 2
- El Hajeb
- Guercif
- Kelaa des Sraghna
- Laayoune 2
- Lakhtatba
- Midelt
- Taroudant

Developers may be selected for each of the locations marked by Masen and a maximum of 40MW of solar PV may be developed at each site, consisting of smaller lots of 5MW to 20MW each.

Next door in Algeria, the government announced in May plans to launch its 4GW TAFOUK1 solar programme, which comprises new solar PV projects spread out across the North African state. The projects have a combined value between \$3.2 and \$3.6 billion, according to the government's own estimate, which has certainly caught the eye of consultants.

The government set out the framework for a 4GW solar programme in April 2017 with the intention of satisfying both domestic power needs and export purposes, but progress had slowed well before anyone worked out what the number after Covid referred to. Regardless, TAFOUK1 is expected to be complete by 2024 and as of yet no advisory team has been appointed on the programme.

Banks

All of these renewable energy opportunities across MENA may well be mouth-watering enough to dampen your facemask, but what about the financial viability of fresh power projects going ahead?

"I think banks are more stable but only the stable projects will attract robust market appetite," one financial adviser in Dubai told *IJGlobal*. "It's an attractive sector and the contractual models have been proven in the region and, as long as they broadly follow the template, then there is no reason why they can't get closed."

Several utilities across MENA have sought outside support to achieve this semblance of stability for the period ahead – only at the start of September Morocco's energy utility Office National de l'Électricité et de l'Eau Potable (ONEE Water) received €50 million as part of a €300 million debt package provided by the European Bank of Reconstruction and Development to the government.

The message being sent is clear – to avoid the panic generated in the market caused by Oman's energy utility OPWP's announcement on 19 May to IPPs (as well as IWPs and IWPPs) that it would be deferring power (and water) capacity investment charges on its offtake agreements. The issue was resolved little over a week later after an intervention by the recently-enlarged Ministry of Finance to maintain these payments. Had the deferrals gone ahead however, the losses would have run into the hundreds of millions of dollars – a far more expensive casualty than damaging market appetite for funding new renewable energy projects.

American colleges tap into energy P3

It takes two to tango and more often than not – when it comes to public private partnerships in the US – the public side has two left feet, according to *IJGlobal* reporter **Elliot Hayes**...

Infrastructure in the US – which has annually been touted by the ill-informed as being on the verge of taking off for longer than anyone cares to recall – has one burgeoning P3 sector that is building towards an impressive crescendo.

The better informed always reply to the claim the market is taking off with the cliché that the US is not one homogenous market but a group of 50 individual markets... and so the discussion follows the path of a million conference panels.

This turbulent year, rocked by a global pandemic, has seen confidence in US infrastructure rocked across more traditional sectors with coronavirus blamed for delays to deal progress as well as public-side funding issues.

For example, the sponsors behind New York's JFK Airport are concerned it will not be able to obtain public funds for the deal unless the federal government bails out the Metropolitan Transportation Authority. Then in Maryland, the transportation department has been blamed for cost overruns and delays to the delivery of the Purple Line as the private consortium threatens to walk away. Over in Hawaii, the Honolulu Authority for Rapid Transportation has delayed the award of its \$9.2 billion transit project for a sixth time due to the Federal Transit Authority refusing to release funds until it is convinced the P3 will work.

It is in this environment that projects being led by educational establishments – with no real ties to the state's administration – are all the more appealing.

There have been 2 P3-style projects brought to financial close in the US since 2017, bringing in the private sector to replace ageing heating and cooling infrastructure and then operate it over the course of a concession, greatly enhancing the university's green credentials which is increasingly important to learning establishments' reputations.

IJGlobal has been tracking the evolution of this sector since its early days and now – having established the foundation of 2



"I think Ohio State was a pioneer, and the University of Iowa is the second of its size."

Andre Cangucu, chief BD officer at Engie North America

recently-closed deals – it is maturing nicely and providing a pipeline of projects with 5 in planning and the potential for many hundreds more.

Engie has firmly established itself in this space, and market rumour has it that the French infra specialist is in discussions to build a team to focus solely on university P3 projects. It is already playing a central role on the 2 consortia that have both taken transactions to financial close – Ohio State University and the University of Iowa.

"I think Ohio State was a pioneer, and the University of Iowa is the second of its size," says Andre Cangucu, chief business development officer at Engie North America.

Ritu Kalra, head of the western region and for higher education in Goldman Sachs' public sector and infrastructure finance division, adds: "A lot of universities are asking themselves, 'Why are we in the business of owning and running our own power plants? That's not our bread and butter!'"

And this dawning realisation within the realms of the US further education world is helping these projects gain a foothold as the "no-brainer element" of these deals (as one industry observer calls it) wins over hearts and minds. They are alert to the attraction of spinning off non-core assets, replacing outmoded, inefficient and dirty infrastructure.

Utility P3s "will proliferate" during the next few years as colleges work swiftly to replace utility infrastructure, according to a report from Moody's Investors Service. In a separate report, S&P Global noted that institutions have started using P3s for energy projects too.

Risk transfer is a key reason that colleges are opting for energy P3s "and that's something you have to get right," Goldman Sachs' Kalra says.

So far, so good

The private sector – having been through the mill for years chasing willow-the-wisp deals being driven by a slew of transport departments – take solace from working with universities where there is no lack of capital to pay leases and an abundance commitment.

The ease with which the \$1.165 billion Ohio State University (OSU) was closed in late 2017 by Engie and Axiom Infrastructure serves as a pathfinder for similar deals. It

involves the lease-based outsourcing of an on-campus energy asset and was an alarmingly straight-forward deal.

"The facility generates electricity with combustion turbines and then utilizes the exhaust heat to make steam and heat water, which Ohio State uses to heat campus buildings," said Serdar Tufekci, chief executive of the SPV.

"The CHP facility also includes a central chiller plant, which will be the first one west of the Olentangy River to provide cooling in the Midwest campus and West Campus buildings. This combined capacity is both financially and environmentally responsible."

Back in 2017, Zach Horn – Engie employee and former OSU student – said: "I really do think that's kind of where energy infrastructure is going to go within the next 20 years. People are definitely going to want to move away from the central power plant and make [sustainability] their own thing. I think Ohio State was ahead of the curve on that."

However, it took until 2019 for an almost identical repeat of the transaction to come to market and make it over the line earlier this year (March 2020). This time, Engie partnered with Meridiam to reach financial close on a P3 transaction with the University of Iowa with its \$1.319 billion utility system.

"This agreement is an excellent step forward for the University of Iowa," says board of regents president Dr Michael Richards. "We must continue to be creative in leveraging our assets to find ways to provide the funding that Iowa's public universities need to be their best."

On Ohio, Engie and Axiom financed its \$1.165 billion P3 with an \$850 million long-term private placement facility backed by around 8 institutional investors, a \$140 million credit facility comprised of a \$125 million revolving capex loan with a five year tenor and \$15 million letter of credit from RBC Capital Markets, MUFG, CIBC and Santander. The equity amounted to \$175 million and was split 50:50 between the 2 SPV members.

"Engie is excited to help lead the University of Iowa in its zero-carbon transition and towards a more sustainable energy future," says Houston-based Gwenaëlle Avice-Huet, chief executive of Engie North America.

As to the 2020 Iowa concession, financing was straight forward. The \$1.319 billion project was financed with \$423 million in equity and \$869.51 million in debt on a 68:32 gearing.

The debt breakdown was split between a commercial bond for \$614.74 million and a capex loan of \$271 million, and \$10 million in working capital. The capex loan and the working capital was provided by KeyBank, KfW-IPEX Bank and Santander.

California State University at Fresno



A week from financial close on the University of Iowa (UI) project, it was announced that Hannon Armstrong had made a \$115 million cash investment to join Engie and Meridiam on the project.

"The UI is pleased to partner with Engie and Meridiam over the next 50 years in order to deliver on its strategic plan, which is focused on the success of students; research and discovery; diversity, equity, and inclusion; and engagement," says UI president Bruce Harreld.

"With Engie and Meridiam, the university has found partners that share our values of investing in our people, improving sustainability, and transitioning toward a zero-carbon footprint."

Cookie cutter contractual agreements

Both deals were done under 50-year concessions. The Ohio deal featured a \$1.015 billion upfront payment to the university while the Iowa deal had a \$1.165 billion upfront payment.

Ohio State is paying the Engie-Axiom consortium an annual fee that includes a fixed fee that starts at \$45 million and grows 1.5% a year and an operating fee to cover costs (starting at \$9.2 million based on a three-year average of university costs).

Iowa will pay its concessionaire a fee of \$35 million from years 1-5, increasing the fee by 1.5% each year after that.

Engie will be operating, redeveloping and maintaining both assets once complete.

Looking Ahead

Since financial close for Iowa University a further 5 deals have been announced.

In June (2020), Iowa State University revealed it was seeking to redevelop its coal-fired utility system via a P3, having closely observed the Engie-Meridiam deal with University of Iowa.

The University of Idaho has been busy preparing to issue procurement documents for redeveloping some its campus utility

assets via DBFOM P3 contracts. The university will first run a procurement for its district energy plant, with the tender due to be released before the end of this year (2020).

California State University at Fresno is set to release an RFP for the Central Utility Plant Replacement Project. The university already has 4 teams shortlisted:

- Bulldog Energy Alliance – Engie and Ullico
- Bulldog Infrastructure Group – Meridiam, Noresco, United Technologies, GHLHN Architects & Engineers
- Plenary Utilities Fresno – Plenary, Webcor Construction, Johnson Controls and Syska Hennessy
- Victor E Energy Partners – Fengage Capital Management, Veolia Energy Operating Services, WM Lyles Co, Kennedy/Jenks Consultants and Taylor Engineering

The University of Maryland, College Park issued an RFQ in April (2020) for the build, operate, maintain and – possibly – finance of its NextGen Energy Program. The deadline to qualify was 29 July and shortlisted bidders are expected in Q4.

In March (2020), The University of Washington (UW) issued an RFI for the renewal of its campus energy systems. The deadline to submit to qualify was 17 April.

Louisiana State University is currently mulling whether it should proceed to issue an RFQ to redevelop its ageing power plant. The RFQ had been due for launch in September (2020) but university officials have yet to agree on a procurement model.

With 5 projects in the pipeline to follow 2 cookie cutter pathfinders and many hundreds of educational establishments around the US being heated and cooled by ancient systems, these projects looks set to be the only infrastructure sector that is coming of age in the 50 individual markets.

New Fundamentals – energy funds in 2020 and beyond

The future is increasingly less restrictive for infrastructure funds investing in renewable energy, according to *IJGlobal* reporter **Arran Brown**...

"Thank god for coronavirus," they'll say. Though not as eloquent as National Geographic and David Attenborough, nor as determined and wilful as Greta Thunberg and Extinction Rebellion, coronavirus may yet earn the distinction of being a more effective catalyst for righting our climate wrongs. It would be the most exquisite irony if the dreaded death of 2020 was the lifeline humanity needed.

Battered oil prices, petrified transport networks, en masse working from home – these are a few of the unintended effects wrought by the disease that brought with them remissions in carbon emissions. Its lasting legacy, however, will arguably be a renewed vigour to the environmental, social, and governance investment imperative.

The pandemic has served as a test of resilience to systemic shock. It has given investors a painful lesson in risk and volatility, one that will only be repeated with the infinitely more menacing threat of climate change. Indeed, Covid-19 and climate change have a common cause: an unthinking and arrogant appropriation of the planet's resources.

Therefore investors, as well as governments and political entities, are now beginning to look again at how their action can have a material influence in the world. ESG funds and renewable investments have enjoyed stability, outperformance of benchmarks, and boosts in investment in spite of the pandemic.

Renewable generation, storage, and energy efficiency funds will welcome and enjoy their new-found vogue. Better late than never, though there has been an unfortunate lag. Among the managers surveyed for this piece, some have been investing in renewables as far back as 1999.

For the old hands, this is just the latest of several developments in the green fund landscape to occur of late. In the past year several listed funds have altered their mandates, and private players have developed revamped fund offerings reflective of the transformed investing environment.

Chris Holmes



"What we've seen in recent years is more competition coming into the market for core renewables – onshore wind and solar in particular."

The Listed Space

Since September 2019, at least three London Stock Exchange Listed funds have requested shareholder consent to alter investment mandates.

On 27 September 2019, energy production-focused The Renewables Infrastructure Group (TRIG) advised shareholders to back plans to recalibrate its geographical mandate from 50% UK, 50% continental Europe exposure to 35:65 in favour of Europe. Shareholders voted overwhelming in favour of the amendment the following month.

At the other end of the energy spectrum, in February this year (2020), the SDCL Energy Efficiency Income Trust (SEIT) – asked its shareholders to remove the 25% minimum exposure to UK assets within two years of its initial public offering. It passed the next month.

The latest listed vehicle to change its mandate proposed a geographical and technological mandate. In June, Bluefield Solar Income Fund sought approval to change its investment objective and policy to allow for no more than 25% of GAV to be invested in other renewable energy assets and energy storage. Additionally, it said that up to 10% of GAV would be invested outside the UK.

Chris Holmes, co-lead investment adviser to JLEN, peer to these funds in the LSE-listed segment, offers his views as to why these changes are occurring at this juncture. "Some of it is down to the vintage of the funds – they launched at a time when it was sensible to have an investment mandate as defined at that time with a return expectation which they set out. Then, that was considered achievable.

"What we've seen in recent years is more competition coming into the market for core renewables – onshore wind and solar in particular. It's made it increasingly challenging for some funds, particularly single sector funds to meet their return targets. The natural thing to do is to ask where else can we go?"

Some arguments issue from the fact that these vehicles are finding it ever more challenging to acquire in the space that they set out originally. This is particularly true of those formerly investing in streams of feed in tariffs (FITs), renewable obligation certificates (ROCs) and contracts for difference (CfDs) – since retired or limited by the UK Government.

Subsidised assets with limited or no exposure to power prices are in demand, meaning in turn that returns on assets with a strong subsidy component are being competed lower.

Outlining its response to these circumstances TRIG noted that European renewables markets still have support schemes (in Ireland, France, Germany). "Elsewhere, falling capital costs, favourable weather conditions, and availability of land have resulted in projects being developed at attractive risk-adjusted returns without

recourse to subsidies," it said in a statement at the time, adding that European non-subsidised projects can achieve returns in line with UK ROC projects.

What's more is that the UK is set to add a further 20GW of renewable energy by 2030, compared with Europe's 100GW.

Jonathan Maxwell



"We are going to be doing more in the UK in certain very interesting areas, but what we've found also – as we knew we would – is that there's quite a significant scale of opportunities in continental Europe."

For SDCL founder and chief executive Jonathan Maxwell, there has never been any question that their vision embraced anything but an international profile. SDCL's mandate adjustment is a question of securing the best risk-adjusted reward for their investors while charting a strategic pathway to grow at scale.

"We are going to be doing more in the UK in certain very interesting areas, but what we've found also – as we knew we would – is that there's quite a significant scale of opportunities in continental Europe."

He stresses the importance of tracing fundamental value: SDCL is presently finding more opportunities in North America than in Continental Europe, and seeing more opportunities in the UK than last year. "We just wanted to remove restrictions that would prevent us from deploying capital in the best interest of shareholders."

One of the advantages of SDCL's model is that revenues are not predicated on incentives and subsidies; it's about doing commercial deals not as susceptible to regulatory headwinds.

"We're about energy solutions to corporate, commercial, industrial, and public sector counterparties," he explains, "to help them meet their energy needs on site and reducing their energy demands in the first place. The propositions have to stand on their own two feet. We offer cheaper, cleaner, more reliable, and more commercially-sustainable solutions."

What of JLEN's mandate? The other Chris at JLEN – Chris Tanner – and partner at Foresight Group – investment adviser to the fund, illustrates their vehicle's in-built advantage: "We have always had a broad mandate to invest in environmental infrastructure, and that includes things beyond renewable energy, things that go with the themes of sustainability and climate change. We feel that we have the right mandate for the times, in terms of energy sustainability, but more generally sustainability – and climate change definitely. JLEN's mandate can support new ways of contributing positively to climate change and sustainability as new technologies and subsectors develop or become attractive."

Environmental infrastructure is defined by the company as infrastructure projects that utilise natural or waste resources or support more environmentally-friendly approaches to economic activity. Beyond generation of renewable energy, it includes the supply and treatment of water, the treatment and processing of waste, and projects that promote efficiency.

Those haven't always been easy adds, according to colleague Chris Holmes. "Yes, there have been times requiring an education for our shareholders to explain JLEN's decision to add different technologies to its portfolio – anaerobic digestion is an example – but over the years we've proven that investing into this technology was a wise decision and the diversification story is illustrative of the

Chris Tanner



"We have always had a broad mandate to invest in environmental infrastructure, and that includes things beyond renewable energy, things that go with the themes of sustainability and climate change."

benefits of JLEN's broad mandate." JLEN's mandate has meant it can invest in a wider range of technologies without having to go through the process of shareholder approval.

Progress in Private Funds

Private green energy fund managers have been refining their investment theses and methodologies for as long, if not longer, than those in the public markets. New iterations of funds have on occasion not just been larger as far as LP commitments go, but broader in geographical mandate and technological focus.

Anaerobic digestion



Rosheen McGuckian



"We knew that growth would be as big in solar as in wind in Europe and that adding solar smooths seasonality of earnings."

Irish fund manager NTR has itself metamorphosed, having been founded in 1975 as a 'classical' infrastructure business, before investing in wind and waste in the 90s, and expanding into wastewater treatment, bio-energy, and solar in the noughties.

The company demerged in 2015 to form Atlas Investments (roads and water) and NTR which exclusively pursued the renewables using vehicles investors were not yet accustomed to.

"When we launched our first fund, we were a bit of an anathema – no one had heard of a long-term fund!" relates Rosheen McGuckian, chief executive at NTR.

NTR's first vehicle – NTR Wind 1 LP Fund – which launched in 2015, is a 25-year fund, providing long-term cash yield from the assets for their entire lives.

"We were slightly ahead of ourselves with our first fund. At the time, two out of three institutions I would speak to about long-term vehicles would express uncertainty or say they were interested but internal rules precluded them from participating."

Fortunately, McGuckian sees the acceptance of longer vehicles broadening in appeal, saying the market is coming round to the logic of having a vehicle commensurate with the life of an asset: "The premise was why would you take the time to get an asset built, have it operating beautifully, and then sell it on?"

NTR's first fund was exclusively onshore wind in the UK and Ireland, aiming to target a technology and geography it was eminently comfortable in, and recognising the ROC and REFIT growth opportunity in the UK and Ireland. "But we always knew we were going to go broader and multi-technology thereafter," says McGuckian.

NTR identified solar as another technology with the lowest cost of electricity, adding it to the second fund's – NTR Renewable Energy Income Fund II – mandate in addition to adding a host of new European markets including Benelux, France, Italy, and the Nordics. "We knew that growth would be as big in solar as in wind in Europe and that adding solar smooths seasonality of earnings. We also allowed up to 15% storage to collocate with wind and solar projects. We knew in developing that aspect of the strategy it would be a big part of the future."

Zug-headquartered SUSI Partners has spent the past 10 years developing single-strategy funds across the green energy spectrum. It launched its maiden fund in 2010 acquiring brownfield renewable energy assets, before developing an energy efficiency strategy – Fund I reached final close in 2013, Fund II in 2019 – in addition to an energy storage fund (final close in 2016).

SUSI's history is closely aligned with the maturity of individual technologies which become trigger points for a fund strategy once the technology became reliable enough at scale to provide the basis for returns.

Their latest venture – the largest yet – is the SUSI Global Energy Transition Fund, which reached a first close this summer. This flagship product brings together production, storage, and energy efficiency within one vehicle.

Marius Dorfmeister, co-chief executive and global head of clients, rationalises the development: "We see a convergence in the market of the three technologies. Years ago, owing to the availability of technology, it was simpler to come up with products relating to energy production. Nowadays you don't do just energy production; it comes with something else whether that be energy storage, energy enabling, or energy efficiency. It makes sense to reflect the convergence of these technologies by having a single fund."

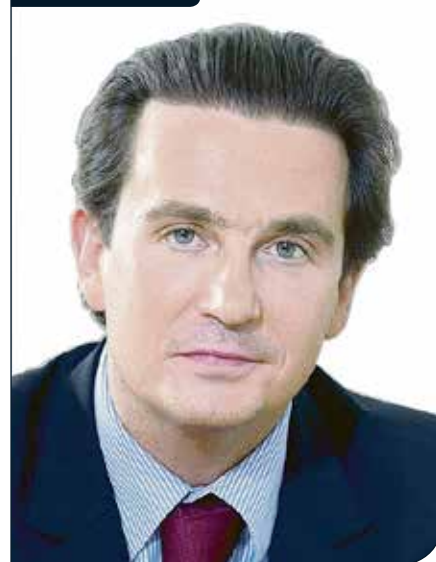
Marco van Daele, co-chief executive and chief investment officer at SUSI, elaborates: "Technology convergence is one aspect. The commercial dimension is another one. We see business models evolving, combining the technologies from an engineering point of view but it's also possible to find a lot of new commercial ways of monetising those

assets beyond just being paid for MW hour produced.

"An example is an investment we've made in Australia. We're backing a developer to roll out a portfolio of residential and commercial behind-the-meter solar rooftop generation and battery storage systems. Combining them leads to a reduction in the energy bill of about 20%, as well as energy consumed. The end consumer doesn't pay for energy consumed, they pay a flat rate that is 20% cheaper than what they used to pay."

Another novelty with the latest fund is its evergreen structure, which they claim is better suited for this holistic approach. SUSI had not used this fund structure previously, explaining that this limitation has been due to traditional fund structures used in infrastructure investing, themselves artefacts of the buyout and real estate world.

Marius Dorfmeister



"Nowadays you don't do just energy production; it comes with something else whether that be energy storage, energy enabling, or energy efficiency."

Dorfmeister points to several advantages of the evergreen structure, including its efficiency. "An advantage is that it cuts out the need for repeat cycles of due diligence, not only a new manager, but a new legal entity – it saves time. It makes sense for consultants to work with fund managers who are entertaining evergreen structures." He adds that the model can reach investors in countries SUSI hasn't had as many clients from, and appeals, too, because it doesn't

limit and cause investors to be stuck for reasons of liquidity. "In the end, evergreen structures are about doing the right thing for the investor" says van Daele. "This structure avoids potential conflicts between investors and the manager, but also between investors in terms of exits especially."

"In a closed-end fund the investors need to be monetised at some point. Sometimes that happens at the right point in the cycle, sometimes not. That creates the potential for conflict. Those are clearly avoided with this structure". He also cites growing numbers of LPs who prefer to receive the return but not the capital in difficult and overly-monetised markets.

The next 10 years

Renewable energy generation has been the favourite strategy of many energy and infrastructure funds for the past 10 years. What forces and trends do the coming 10 portend?

Single technology funds are increasingly unlikely to stand out in a growing segment. Some see a bifurcation of the market, where there is a justification for specialist players with deep knowledge of a sector. For van Daele, unfocused yet sub-scale funds might be less favoured. "You'll be competing both with local players who have better networks and with global capital that flows into an increasingly commoditised sector."

JLEN's Chris Tanner emphasizes the importance of the pipeline for these prospective single tech funds. He recommends: "A very strong pipeline in the sector you've chosen. With the history of listed renewables funds in the market, there is a wealth of educated investors who would be happy with multi-technology funds. You've got to have a compelling pipeline that will allow you to be able to hit growth targets in several years' time."

"There is still scope for single technology funds, they do exist and it's a justifiable strategy", argues NTR's McGuckian. "The limitation is what happens when the tap is switched off and the government decides they no longer want to subsidise a particular technology as happened in the UK with onshore wind? The advantage of having several countries in your mandate is that you can go where the growth is and also differing technologies succeed to different levels in different locations – so with multi-jurisdiction de facto you're going multi-technology."

New investment jurisdiction is an avenue being pursued by players in the forthcoming decade. SUSI, notably, is developing local expertise for the launch of its inaugural Southeast Asia fund, which promises a higher risk-return profile. Likewise, Germany's Aquila Capital is understood

Marco van Daele



"In a closed-end fund the investors need to be monetised at some point. Sometimes that happens at the right point in the cycle, sometimes not."

to be developing its ties in the market there, influenced by Daiwa Energy and Infrastructure's acquisition of a stake in the manager in 2019.

All managers are optimistic for the scope innovation across the next 10 years. Part of that is the convergence of technology which will be reflected in investments and sources of income for funds. "I do agree there is a greying between different areas," says McGuckian. "We already provide paid-for grid firming services with our wind and solar assets. For certain projects, it makes a lot of sense to add storage to projects. You have an expensive grid connection that can take more than your generation can provide for maybe 60% to 70% of the time, so you can collocate two technologies and enhance revenues by selling at time of generation, selling at another time when required, or by providing grid firming services."

Electrification of transport, heating, industrials, efficiency and hydrogen are all sectors earmarked for advancement and targets for funds in the next decade. Subsidies will undeniably form a big part of that. A desire for a green recovery has also unlocked development capital for some of these.

The EU set out green hydrogen as a major part of where investment needs to go. Though some say it's not going to be hugely commercialised in the next 2 to 3 years. Germany and France have announced

dedicated capital to catalyse innovation in these areas, in particular hydrogen. As for the UK, JLEN's Chris Holmes believes more needs to be done. "The government should be turning its attention to its long-term net zero target by 2050 and ask itself what the new areas are that need stimulus, be it transport, hydrogen, carbon capture and storage. These are the sectors that need support."

European policy makers have set much more significant CO2 reduction targets for 2030 compared to 2020 goals. A key component in meeting those targets will be by addressing buildings, which constitute 40% of energy demand and 30% of greenhouse gas emissions. A significant way to bring these down is energy efficiency.

SDCL's Jonathan Maxwell is enthused by what this promises. "The solutions for the next 10 years don't look like the solutions of the past 10 years. The renovation wave forming part of the EU's green deal is essentially a euphemism for energy efficiency. The sums being poured into this are absolutely mind blowing. This is really a shift in gears. That's not to say there won't be stimulus in renewables, but what is going on in energy efficiency will be orders of magnitude larger."

Promising applications in energy efficiency include integrating energy efficiency in new build construction, applications for green gas such as greening the gas grid, in parallel to greening the electricity grid.

Continued evolution and innovation will definitely come on the technology side. One of the dimensions often overlooked is on the commercial side. The affordability of technology drives business models and that's the main innovation arena over the next 5 or 10 years according to SUSI's Marco van Daele. "Given technologies are available and reliable at scale and cheaper, the toolkit is there to come up with very innovative business models, and that's the exciting question."

The ESG wave won't be stopping any time soon. Marius Dorfmeister highlights the tidal shifts in asset allocation by institutional investors, particularly away from volatility and especially towards ESG propositions.

Undoubtedly the green energy investment fund space is undergoing a renewal of its vows to address global concerns while courting many new suitors. It couldn't be happening sooner. SUSI's van Daele strikes a positive note, though: "If you take the mindset that every challenge is also an opportunity, then climate change being the biggest challenge confronting mankind this century, then it is also the biggest opportunity."

Winds of Change – technological constants

With renewables taking centre stage for greenfield investment, technologies – old and new – are being evolved and innovated. Here *IJGlobal* reporter **Sophie Mellor** focuses on some of the most recent developments in the battle against climate change...

The energy sector in recent years has witnessed more innovation than at any time since the Industrial Revolution. Countless technological enhancements have been made to increase output and bring niche sectors up to utility scale, progressively moving power generation away from fossil fuels.

As the market shifts away from reliance on fossil fuels with lenders and investors increasingly opting out of “dirty” forms of energy production as an ESG requirement, the self-starting evolution of alternative energy is receiving support from all sides.

Renewable energy – a growing percentage of which is produced by offshore wind – is in many markets rapidly replacing coal, oil and (increasingly) gas. In line with this trend, the industry is moving to upend the energy economy with new technologies to replace or enhance established ones.

With most of the conversation centred on offshore wind, it is pretty much talked out and already working at maximum efficiency... in the right conditions. Deeper water, intermittent wind and wake loss effects are of the drivers for the investment in technology.

Water depth poses a challenge in unlocking markets where offshore wind could be a viable energy producer. However, with the maturity of offshore wind, the period of apprehension before large-scale floating turbine investment was remarkably short.

However, the relatively high capital expenditures for deep-water wind arises from substructure and installation expenses – amounting to 35% of total construction costs. As a result, developers and researchers are modelling anchors and substructures around those found in nature to cheapen costs through efficiency.

A team at Purdue is working to 3D print anchors with concrete – as opposed to the more typical steel option – in multiple thin layers stacked one on top of another similar to that found on the shells of shrimp. The new structure and material will make the anchors resilient to cracking as it moves with the tides of the sea.

Other projects like SpiderFLOAT created by America's National Renewable Energy Laboratory is designing modular components shaped like spider legs to reduce the costs of deepwater substructures by limiting materials and simplifying routine O&M costs.

Another large growth market in floating technology is solar – the less sexy, but equally practical technology which has the more alluring feature that it can be located on any significant body of water.

New technologies, like those developed by Ocean Sun, envisage placing floating solar panels on dams and in slow moving rivers, lakes, coastal seawater, and manmade reservoirs using technology based on the structure of water lilies.

As opposed to the solar PV panels made of polyethylene plastic – commonly used for conventional solar systems – Ocean Sun's floating units are made of a polymer membrane, which are thin, lightweight, and buoyant enough to stay atop water surfaces.

The polymer membrane material is also hydro-elastic in nature and 1mm thick, allowing it to move with the waves, rather than resisting them.

However, biomimicking only goes so far. Like pigeons excelling at living in an urban environment, innovations are growing around the energy caused by human movement. Shell is installing turbines next to motorways utilising wind draft force from cars moving at high speed, collecting the air pushed away as they travel.

Opposing this and far more concealed in nature, the first shaft hydropower plant has gone on stream in Germany this month, installed inside a river bed.

Developed at the Technical University of Munich, the new plant does not need to divert the course of the river but instead, is dug into the upstream of a weir. The water flows into a shaft with a turbine and generator, drives the turbine, and is then returned to the river under the weir, seamlessly integrated into the river's natural environment.

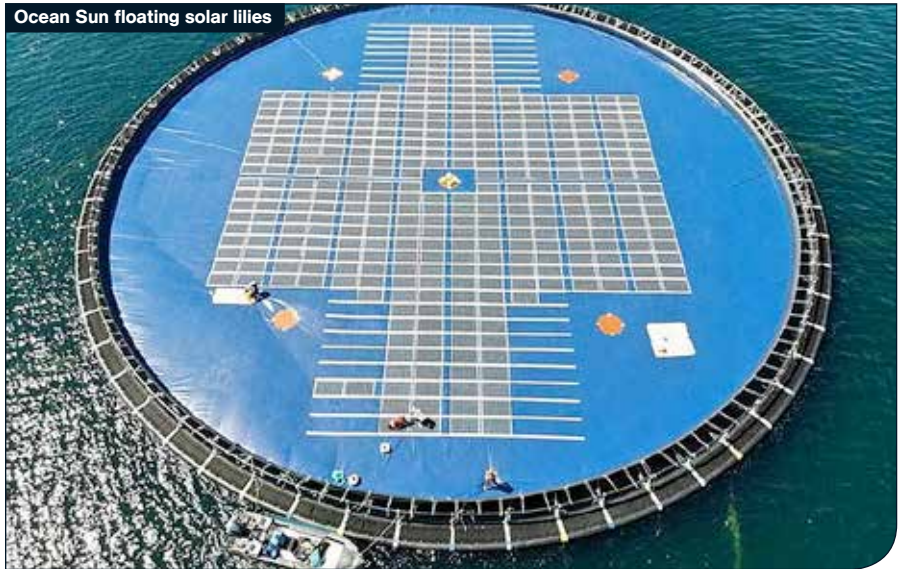
Orbital Marine Power



Meanwhile out at sea, renewable energy specialists are as always keen to get marine power working at large scale efficiency.

In the first *IJUnplugged* webinar with Chris Milne, chief financial officer of Orbital Marine Power, *IJGlobal* discussed the Scottish company's discrete 2MW unit, which can be placed under water, to generate energy from the ebbs and flows of the tide. One of its greatest strengths is that the submersible turbines can be raised above sea level for routine maintenance and repairs.

Ocean Sun floating solar lilies



"Now more than ever, we have an incredible opportunity to partner with clients, researchers and product developers to develop technologies that bring cleaner energy choices to residential consumers."

Dr Tej Gidda, GHD global future energy business leader

Meanwhile in the world of hydrogen, large-scale projects are being financed and built with government and private finance support. Even with significant electrolyzers in project pipelines finally being realised, this has not slowed innovation in its scale and its power.

GHD is attempting to create a household hydrogen energy storage system – LAVO – to collect and purify rainwater, and use energy from household solar panels to produce a 60kWh battery, allowing self-sustaining household energy, independent from the grid.

In other cases, firms are incorporating hydrogen into construction infrastructure, long-haul trucks, vans and cars as well as in the latest Microsoft datacentres.

There has been an upsurge in pressure from the public to realise hydrogen fuel cells in cars and buses within cities, but electric vehicles are winning this battle even though they take considerably longer to charge... though significant technology improvements are being driven on this front.

Some researchers are looking to charge cars wirelessly. A team at Stanford University is building a system capable of efficiently transferring power instantly to a moving vehicle within arm's length using magnetic coils – expecting a product by 2022.

While discussing renewables, it is important to note that on the other end of the spectrum, technological advancements

are still being deployed to increase the efficiency of fossil fuels. Flylogix and Cambridge Consultants, part of the Capgemini Group, are now using local drone piloting from centrally-controlled operations to increase the resilience of their services to offshore oil and gas installations and lower costs.

Wireless EV charging



Innovation has built a head of steam in recent years and the momentum behind these developments continues to impact the market on a seemingly daily basis, leveraging greater efficiency and lower costs. But with the race to fulfil ESG requirements and get renewable energy assets operational and competitive, farfetched technologies are now being taken seriously with large developers and financiers ready to deploy capital.



Top Trumps – wind turbines

R&D is leading the turbine manufacturer agenda, rolling out ever-larger units for a market that is not ready to deploy them. In such a fast-moving environment, it is only a matter of time before their efforts pay dividends, writes *IJGlobal* reporter **Elliot Hayes**

Research and development is leading the agenda for wind turbine manufacturers as they roll out ever-larger units for a market that is not quite ready to deploy them. However, in such a fast-moving environment where big is beautiful, it is only a matter of time before their efforts pay dividends.

While there will always be a role for the land-based turbines which tend to range in size from 1MW at the humble end of the

scale to 7MW where planning permission can be achieved, the R&D efforts are being focused where the turbine manufacturers believe the market is shifting – offshore.

To this end, there is constant competition among the market leaders to roll out increasingly-large units with the biggest model commercially available at the time of going to press being the 14MW offering from Siemens Gamesa.

Size does not always matter when it comes to turbines, however. With the launch of bigger and more powerful turbines, it does not render its smaller counterparts obsolete.

Siemens Gamesa seems to have covered itself from all angles with a selection of turbines ranging from a 2.1MW unit straight up to its 14MW power house announced earlier this year. However, there are reasons to choose a smaller turbines. Pricing is what

first comes to mind and of course regulations surrounding the visibility of turbines from shore are also a big factor, not forgetting (in some cases) impact on military radars.

Granted, the more powerful the turbine the fewer the number of units the developer will need to install to achieve the total windfarm's required output, which is especially important when working offshore installing them on the seabed... not to mention the previously-agreed placement of units with the relevant planning department.

With the introduction of floating offshore wind and its apparent approval from the finance community, just how big turbines will get in the next few years is a matter for conjecture.

Lenders wring their hands at the notion of turbines growing beyond their comfort zone and suggest that it will be more challenging to lend against them, but the wind farm developers will hold their feet to the fire until they turn up at the table... and in no time at all their greatest concern will have become mainstream. And the worst case scenario is that the turbine manufacturers end up with plenty of promo shots for PR.

As for the special purpose vehicles forging ahead with offshore windfarms around the world as the sector becomes increasingly mature, there is a wide array of turbines available leaving developers spoilt for choice.

Big is bountiful

Siemens Gamesa ranks highest in the tables for having announced earlier this year the largest offshore wind turbine to be brought to market. Production is pencilled for 2024 on the 222 DD which seems a long way off, however with wind farm developments being extensive it will not be long before developers come knocking.

"We've gone bigger for the better... The new SG 14-222 DD is a global product which allows all of us to take giant steps towards protecting and preserving our planet."

Markus Tacke, chief executive of Siemens Gamesa Renewable Energy

Siemens Gamesa is seeking to have a Danish test site up and running for this model by 2021. Markus Tacke – chief executive of Siemens Gamesa Renewable Energy – says of this new model: "We've

gone bigger for the better... The new SG 14-222 DD is a global product which allows all of us to take giant steps towards protecting and preserving our planet.



Siemens Gamesa 14-222 DD

Nominal power: 14MW (15MW with power boost)

Gear Box: Direct drive

Swept Area: 39,000.0 m²

Rotor: 222 Metres

Blade: 108 Metres

Height: Site specific

Wind Class IEC: IS

Siemens Gamesa ranks highest in the tables for having announced earlier this year the largest offshore wind turbine to be brought to market. Production is pencilled for 2024 on the 222 DD which seems a long way off.

"We ourselves became carbon neutral in late 2019 and are on track towards meeting our long-term ambition of net-zero CO₂ emissions by 2050. Our installed fleet of over 100GW both offshore and onshore abates more than 260 million tons of CO₂ emissions annually."

General Electric announced the launch of its GE Haliade-X turbine in 2018 and installed its first test unit in Rotterdam the following year. The team is working to obtain its Type Certificate and this should be completed in 2020.

Ørsted has already signed with GE to use the turbine on two US windfarms – the 120MW Skipjack in Maryland and the 1.1GW Ocean Wind in New Jersey – that will be commissioned in 2022 and 2024, respectively.

At the launch of this model, John Lavelle – chief executive of offshore wind at GE Renewable Energy – said: "This is a very important milestone for us as it confirms the robustness of our Haliade-X 12MW design, and gives certainty to our current and future customers who believe in the attributes of our platform."

"When we introduced the Haliade-X 12MW we established a new paradigm in the industry, and we will continue to do so by innovating, improving, and introducing new features to our Haliade-X platform, making offshore wind a more affordable and competitive source of renewable energy."

For MHI Vestas, the popular V164-9.5MW has been regularly upgraded. It was originally called the V164-7.0MW when first launched in 2014, the output was then increased to 8MW and later to 9MW. With an upgrade to a 10MW unit also currently available, it was the first wind turbine to achieve double digit power.

"This is a very important milestone for us as it confirms the robustness of our Haliade-X 12MW design, and gives certainty to our current and future customers who believe in the attributes of our platform."

John Lavelle – chief executive of offshore wind at GE Renewable Energy



GE Haliade-X

Nominal power: 12MW

Gear Box: Direct drive

Swept Area: 38,000.0 m²

Rotor: 220 Metres

Blade: 107 Metres

Height: 260 Metres

Wind Class IEC: IB

General Electric announced the launch of its GE Haliade-X turbine in 2018 and installed its first test unit in Rotterdam the following year. The team working to obtain its Type Certificate and this should be completed in 2020.

MHI Vestas chief technology officer Torben Hvid Larsen said: "At MHI Vestas, we are focused not on what others are doing but being the best at what we do. The V164 – 10MW turbine in the best proof point yet that we do not accept limitations of conventional thinking and that we think beyond ourselves. We have embraced the challenge of transforming what is possible in our field."

MHI Vestas has signed a deal with SSE for its 1.1GW Seagreen wind farm and also

with Engie and EDPR for its 30MW floating wind farm.

The upgrade was achieved through a small design change to enhance airflow and increase cooling in the converter.

"At MHI Vestas, we are focused not on what others are doing but being the best at what we do. The V164 – 10MW turbine in the best proof point yet that we do not accept limitations of conventional thinking."

Torben Hvid Larsen – chief technology officer at MHI Vestas



MHI Vestas V164-9.5 MW **TOP TURBINES**

Nominal power:	9.5MW (10MW with upgrade)
Gear Box:	Planetary
Swept Area:	21,124.0 m²
Rotor:	164 Metres
Blade:	80 Metres
Height:	220 Metres
Wind Class IEC:	T

The popular V164-9.5MW has been regularly upgraded. It was originally called the V164-7.0MW when first launched in 2014, with regular upgrades ever since. It was the first turbine capable of double digits. The output was then increased to 8MW and later to 9MW, and is eminently scalable.

China

Looking towards China, and the army of wind turbines that is appearing along the coast line, it is on track to become a large market for turbine manufacturers. However, Chinese specialists have been working to develop some of the largest turbines on the market.

Over the course of the last three to four years, a time of rampant M&A movement on greenfield projects in European seas, Chinese companies have been aggressively outbidding European rivals to own stakes in big projects to learn the technology to bring it back to China.

The process started in 2016 when State Development and Investment Corp (SDIC)

bought Repsol out of its stakes in the Beatrice and Inchcape offshore wind farms in the UK.

China Three Gorges quickly followed suit and in the same year bought an 80% stake in Germany's 288MW Meerwind offshore wind farm for €1.7 billion. The following year after a call from the Beijing government to go global on offshore wind, China Resources National bought a 30% stake in the Dudgeon wind farm in Scotland for £803 million.

China Three Gorges then went on to buy a 10% stake in the 950MW Moray East Wind Farm (Scotland) paying £35 million for a minority stake in 2018... and this is when blockades on Chinese investments into European wind cropped up.

At around this time, China opted to evolve its own offshore wind market. Designed for sites off the south-east coast, Goldwind installed its first 8MW turbine on the Xinghua Bay II offshore wind farm in April 2020.

The Chinese turbine manufacturer says the Goldwind GW175 8MW is the latest generation of large-capacity offshore wind turbines with fully-independent intellectual property. It is designed to house all electrical equipment in the nacelle and is typhoon adapted. The manufacturer has also been creeping up on its competitors as it claims it will deliver turbines of more than 15GW in 2020.



Goldwind GW175 8MW **TOP TURBINES**

Nominal power:	8MW
Gear Box:	Direct drive
Swept Area:	24,053.0 m²
Rotor:	175 Metres
Blade:	85.6 Metres
Height:	110 Metres
Wind Class IEC:	S

The Goldwind GW175 8MW is the latest generation of large-capacity offshore wind turbines with fully-independent IP. It is designed to house all electrical equipment in the nacelle, and is typhoon adapted.

A spokesperson for Goldwind told *IJGlobal* that "With more than 60+ gigawatts and 34,000 permanent magnet direct-drive wind turbines installed worldwide, Goldwind's 8MW offshore turbine further demonstrates the power and breadth of this technology

in a myriad of complex wind applications. Based off of Goldwind's 6MW offshore machine with 80% universal component parts, this latest and the largest turbine produced by Goldwind is a laddering development that maximizes technical continuity, reliability and performance".

China Dongfang Electric's 10MW turbine is China's first independently-made double-digit turbine. A prototype was installed on the same wind farm as the Goldwind GW175 8MW in July 2020 and then connected to the grid the following month. Once the prototype passes test and verification, it will be ready to go to market with the developer claiming it can make up to 100 units per annum. The turbine is typhoon resistant and features a permanent magnetic direct drive system and carbon fibre blades.



China Dongfang Electric - 10MW **TOP TURBINES**

Nominal power:	10MW
Gear Box:	Magnetic direct drive
Swept Area:	26,880.0 m²
Rotor:	185 Metres
Blade:	90 Metres
Height:	115 Metres
Wind Class IEC:	I

China Dongfang Electric's 10MW turbine is China's first independently-made double digit turbine. DEG has put its money on this model for scalable deployment off the coasts of China and beyond.

Yu Peigen, general manager of Dongfang Electric Group, stated that: "The roll-out of the 10MW unit has made the leap forward and large-scale development of the wind power industry from onshore to offshore possible, and has also laid a solid foundation for Dongfang Electric Group to become stronger, better and bigger."

As with all renewable energy technology, R&D is forging ahead at full speed with innovations being brought out to increase output on existing models with the primary goal to reduce the number of models deployed for maximum generating capacity. As new markets open up to the potential of offshore wind and floating models become widely accepted, there is no reason to believe individual units will not be able to create a great deal more than 15MW... in time.

MLAs - VALUE

Rank	Company	Deal Value (USDm) May 2020 - August 2020
1	BNP Paribas	1018
2	Mizuho Financial Group	789
3	Credit Agricole Group	594
4	Societe Generale	572
5	Groupe BPCE	542
6	Morgan Stanley	479
7	Sumitomo Mitsui Financial Group	442
8	UniCredit	437
9	Mitsubishi UFJ Financial Group	395
10	Credit Suisse	369
11	OCBC Bank	342
12	Sumitomo Mitsui Trust Holdings	260
13	DBS Bank	253
14	Standard Chartered Bank	180
15	ING Group	176
16	Citigroup	156
17	Nomura	149
=	National Bank of Canada	149
19	CIT Group	102
20	BancoEstado	100

FINANCIAL ADVISERS - VALUE

Rank	Company	Deal Value (USDm) May 2020 - August 2020
1	Royal Bank of Canada	2,542
2	Houlihan Lokey	1,686
3	Whitehall & Company	1,300
4	Mizuho Financial Group	1,183
5	Sumitomo Mitsui Financial Group	1,140
=	Alderbrook	1,140
=	Cranmore Partners	1,140
8	Macquarie	692
9	EY	558
10	Barclays	154
11	Scotiabank	152
12	Leucadia National Corporation	110
13	Planum Partners	30

LEGAL ADVISERS - VALUE

Rank	Company	Deal Value (USDm) May 2020 - August 2020
1	Hunton Andrews Kurth	13,040
2	Latham & Watkins	5,370
3	Morgan Lewis & Bockius	4,409
4	Sidley Austin	3,800
5	Clifford Chance	3,468
6	Milbank	3,140
7	Emmet Marvin & Martin	3,100
8	Bracewell	2,200
9	Jones Day	2,050
10	Mishcon de Reya	2,000
11	Debevoise & Plimpton	1,831
12	Vinson & Elkins	1,686
13	Shearman & Sterling	1,660
14	Norton Rose Fulbright	1,538
15	Aleman Cordero Galindo & Lee	1,535
=	Arifa	1,535
17	Herbert Smith Freehills	1,440
18	Simpson Thacher & Bartlett	1,350
19	Baker McKenzie	1,335
20	Saul Ewing Arnstein & Lehr	1,300

SPONSOR - VALUE

Rank	Company	Deal Value (USDm) May 2020 - August 2020
1	Engie	3,542
2	Nextera Energy	3,490
3	AES Corporation	3,260
4	E.ON	2,170
5	NiSource Inc	2,000
=	Air Products and Chemicals	2,000
7	Ontario Power Generation	1,963
8	Dominion Questar Gas	1,800
=	Duke Energy	1,800
10	Xcel Energy	1,569
11	Entergy Corporation	1,370
12	Exelon Corporation	1,300
=	Global Infrastructure Partners	1,300
14	American Electric Power	1,200
15	TenneT	1,139
16	PPL Corporation	1,037
17	EIG Global Energy Partners	988
18	Carlyle Group	843
19	Eurogrid	809
20	Empresas Públicas de Medellín	750

MLAs - VALUE

Rank	Company	Deal Value (USDm) May 2020 - August 2020
1	Rabobank	1,743
2	Societe Generale	1,427
3	BNP Paribas	1,351
4	Credit Agricole Group	1,339
5	Santander	1,304
6	Sumitomo Mitsui Financial Group	952
7	CaixaBank	904
8	Mitsubishi UFJ Financial Group	754
9	AMP	670
10	HSBC	545
11	ING Group	544
12	Royal Bank of Scotland	512
13	Groupe BPCE	472
14	Mizuho Financial Group	448
15	KfW	442
16	NordLB	420
17	Citigroup	412
18	Banco Sabadell	383
19	CoBank	374
20	BayernLB	351

FINANCIAL ADVISERS - VALUE

Rank	Company	Deal Value (USDm) May 2020 - August 2020
1	Mitsubishi UFJ Financial Group	3,867
2	BNP Paribas	2,795
3	Green Giraffe	1,790
4	Santander	1,786
5	Evercore Partners	1,728
6	Macquarie	1,060
7	EY	838
8	CohnReznick	704
9	IN.Credible World	607
10	Plan A Capital	603
11	Riverside Risk Advisors	558
12	Bank of America	533
13	CCA Group	521
14	Operis	467
15	BBVA	431
=	Chatham Financial	431
17	International Finance Corporation	414
=	UniCredit	414
19	Astris Finance	410
20	Scotiabank	403

LEGAL ADVISERS - VALUE

Rank	Company	Deal Value (USDm) July 2020 - August 2020
1	Clifford Chance	8,618
2	Norton Rose Fulbright	5,330
3	Linklaters	5,137
4	Latham & Watkins	4,250
5	Ashurst	3,800
6	Milbank	3,373
7	Watson Farley & Williams	2,444
8	Allen & Overy	2,325
9	Shearman & Sterling	2,304
10	White & Case	2,214
11	DLA Piper	2,137
12	Mayer Brown	2,013
13	Aleman Cordero Galindo & Lee	1,535
=	Arifa	1,535
15	Garrigues	1,390
16	Herbert Smith Freehills	1,303
17	Cuatrecasas	1,235
18	Jones Day	1,061
=	Loyens & Loeff	1,061
20	Wilson Sonsini Goodrich & Rosati	1,030

SPONSOR - VALUE

Rank	Company	Deal Value (USDm) May 2020 - August 2020
1	Equinor	3,361
2	AES Corporation	3,281
3	SSE	2,172
4	Total	2,144
5	KKR & Co	1,357
6	Enercon	1,231
7	TenneT	1,139
8	Calpine	1,100
9	EDF	1,093
10	Iberdrola Group	902
11	JP Morgan	847
12	WPD	847
13	SoftBank	816
14	Gulf Energy	815
15	Eurogrid	809
16	Canada Pension Plan Investment Board	735
17	sPower	704
18	Mainstream Renewable Power	644
19	Windparke Zeewolde BV	607
20	Boralex	603



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Cleaning up in **LatAm & Caribbean sanitation**

There's a big opportunity cropping up across Latin America and the Caribbean as programmes of sanitation PPPs work their way through the system. IJGlobal's Americas senior reporter **Juliana Ennes** delves into this murky world...

Latin America and the Caribbean, despite being the most urbanized region in the world – with a concentration of 80% of its population living in cities – have yet to solve one of the most basic infrastructure issues: water and sanitation services.

The current world health crisis has highlighted the enormous gap in the region. According to International Finance Corporation (IFC) data, only 60% of the region's population is connected to a sewage system and less than 40% of the region's wastewater is treated.

In times of airborne virus pandemics, which require frequent and thorough handwashing as the most basic frontline defence, access to clean water becomes an even more urgent necessity... if it was not already being treated as such by governments.

To bolster this drive, the United Nations has made universal access to safe drinking water one of its 17 sustainable development goals for 2030, an acute issue in Latin America where some 35% of the people do not have access to reliable potable water services.

However, while the Covid-19 pandemic has brought this issue to sharp relief, it has also created budget constraints for governments, limiting their investment power – even to something as basic and urgent as water and sanitation services which are largely provided by public utilities and state-owned companies throughout the region.

But, as high-risk investors like to say, wherever there's a challenge, there's also an opportunity.

Many countries in the region are accelerating the structuring of public private partnerships in an attempt to guarantee that clean water and sewage collection and treatment are provided in a universal and efficient manner, without depending entirely on public funding.

Adil Marghub, IFC's regional industry sector senior manager on the Latin American and Caribbean infrastructure and energy group, points out that the region has currently few PPPs or private sector-driven projects in water and sanitation.

"You need to create contractual structures to bring in the private sector into that space. In many places, it is still a sector dominated by either a state or a sub-national utility," says Marghub.

The opportunity focal point is Brazil, a country with a population of almost 210 million people where nearly half of it does not have sewage collection and around 35 million people do not have access to clean water.

The fifth largest country in the world has just laid down the main foundation for the advancement of private sector participation in sanitation projects. After two years of discussion in Congress, in mid-2020 Brazil approved the new law establishing clear goals for universalization of sanitary services by 2033, which will require an investment

Adil Marghub



"You need to create contractual structures to bring in the private sector into that space."

of between R500 million (\$90m) and R700 million (\$126m). One of the biggest changes of the new regulation is increased openness for private parties to act in the sector, either through concessions or privatizations.

Location	Alagoas	Cariacica (ES)	Rio de Janeiro	Acre	Amapa	Rio Grande do Sul	Porto Alegre (RS)	Ceara
Business model	Concession for water & sewage distribution	Sewage PPP	Concession for water & sewage distribution	Water & sewage concession	Water & sewage concession	Sewage PPP	Water and/or sewage concession	Sewage PPP
Population (m)	1.4	0.4	13.7	0.6	0.7	1.9	1.5	4.1
Capex (\$m)	1,097	111	6,252	255	801	289	192	1,540
Auction	Q3 2020	Q3 2020	Q4 2020	Q1 2021	Q1 2021	Q2 2021	Q2 2021	Q3 2021



This participation will also be facilitated by the centralization of responsibilities at the national water agency (ANA), which from now on will define technical rules and tariffs to be adopted. This is a massive improvement on the previous way where a decentralized system created uncertainty for investors.

Brazilian development bank BNDES is already building a pipeline of projects. Its sanitation portfolio currently has 8 projects that will require investments of more than R\$50 billion (\$9bn).

"In our modelling for sanitation projects, no one is left behind. All municipalities are included," says Fábio Abrahão, managing director of infrastructure, concessions and PPPs at the development bank.

BNDES will bundle cities together, where larger and richer ones will be paired with smaller / poorer localities. This is to avoid less-interesting regions failing to attract bidders.

The two most advanced projects are in the Metropolitan region of Maceió, in the state of Alagoas, in Cariacica (Espírito Santo state). Rio de Janeiro's project, although advanced, threatens litigation due to political opposition to privatization of parts of the state-owned company Cedae.

Additionally, the bank has been structuring projects to the states of Acre, Amapá, Ceará, and Rio Grande do Sul.

The bank's goal is to create projects that are financially robust and improve efficiency in the services provided. In water distribution, for example, losses average at around 40% due to theft, leaks, lack of charges and overall operational inefficiency. With 40% as an average, the worst end of the scale suffers losses up to 70%.

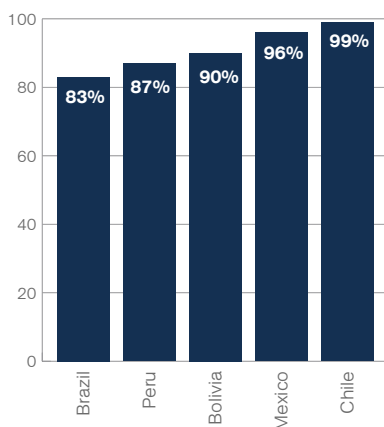
Although improved efficiency as the key to financial sustainability might seem risky, Marghub from the IFC says the same process happened in the country in the mid-1990s when Brazil started to open its power sector to private parties, which has been largely successful. "I see that as a direct analogy when I think about non-revenue water," he adds.

"It is more important to look at the efficiency when you bring in the private sector. You are able to measure things like quality of service, increase in connections. Those are real tangible things that private sector investment can bring."

As with the poorer areas of Brazil, some smaller Latin American and Caribbean countries worry about the impact on tariffs, as charging for water and sanitation could have massive social impact.

In some cases, however, the cost per gallon already paid today by people who do not have reliable access to water could be a lot higher than a private company

Water Access Index
(% of the population)



Source: IFC

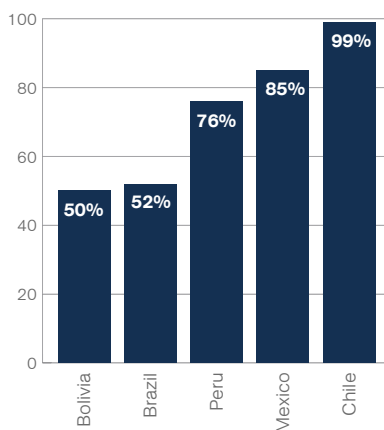
providing regular services. Hiring private tankers to bring in water is a common – and expensive – practice throughout the region.

Water and sanitation inequality is a reality among Latin American countries. Chile for example has 99% of its population with both water access and sewage access, while Bolivia has 90% and 50% respectively.

A good example of a country that still has a relevant infrastructure gap but that already has a history of private sector participation in water and sanitation is Peru. Around 87% of the population has access to water and 76% to sewage.

Peru's water and sanitation sector is dominated by public utilities, but about a decade ago it developed a successful pipeline of PPP projects, where at least five mega-projects around Lima were awarded.

Sewage Access Index
(% of the population)



Source: IFC

With the economic downturn and political instability in the country, however, the pipeline dried up and no project was awarded between 2012 and 2019. And then the country's procurement agency – ProInversión – awarded the water treatment plant PTAR Lake Titicaca.

Diego Harman, a partner at Garrigues who worked in the previous wave of sanitation PPPs, says that Covid-19 has made the social infrastructure gap in Peru even more evident.

"There is now a real push because of the pandemic to try to award more sanitation projects and social infrastructure in general."

He highlights that Peru is a country where many international investors have confidence, where a lot of PPPs have been successful. Now, this growing interest depends only on having sufficient projects to invest in and on the contractual structure chosen.

"As long as the government tries to replicate what has already worked in the past when it comes to sanitation PPPs, I think that the structure will become very successful and the projects will be well received by investors," Harman said.

The IFC's Marghub, agrees that private investors will come if countries create the right framework and competitive processes. He does not see that happening across the region in one fell swoop, however.

"To be realistic, it is more important to step back and build the foundations in some countries. In Brazil, you had to change the law, which took some time. In other countries, you may need to put in the right frameworks and availability of the government to provide PPP teams, but that takes time. If you start the projects with these building blocks in place, then projects can start moving faster," he says.

It is not uncommon for Latin American and Caribbean countries to have limited data availability, which hinders efforts to optimize sector planning, develop effective public policies and use existing infrastructure.

The region does not want for support to make this transition a reality with the likes of the Inter-American Development Bank (IDB) and the Latin American and the Caribbean Water and Sanitation Observatory (OLAS) which is designed to provide reliable, comparable, timely and consistent information to help monitor development progress associated with water and sanitation.

In a world hungry for projects to fund, lend to, deliver and operate there will be no end of support at hand... so long as the right structures are in place to achieve improved water delivery and treatment.



Peru offers attractive investment opportunities in water & sanitation projects.

Invest in a country with a sound economy, with policies that favor the development of national and foreign investment and that provides multiple investment opportunities.

PUERTO MALDONADO WWTP PROJECT

This public-private partnership comprises the design, financing, construction, rehabilitation, expansion, operation and maintenance of collection, treatment and final disposal systems of municipal wastewater of Puerto Maldonado city (in the south eastern region of Peru).

- ◆ Concession term: 22.5 years
- ◆ Estimated investment: USD 50 million
- ◆ Status: Called (September 2020)
- ◆ For more information: visit www.proinversion.gob.pe/ptar-puerto-maldonado

HEADWORKS AND CONDUCTION WORKS FOR THE DRINKING WATER SUPPLY IN LIMA

This public-private partnership comprises the design, financing, construction, operation and maintenance of a water collection system in the high Andean area of Peru, to channel it to the capital, Lima.

- ◆ Concession term: 30 years
- ◆ Estimated investment: USD 600 million (phases I and II)
- ◆ Status: To be called (Q IV 2020)
- ◆ For more information: visit www.proinversion.gob.pe/obras-cabecera-lima

Moreover, obtain information on more projects in the sanitation sector and others, in the portfolio for 2021 at WWW.PROYECTOSAPP.GOB.PE



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ProInversión Q&A – Peru

resumes sanitation PPPs

IJGlobal's Americas Senior Reporter **Juliana Ennes** speaks to Karin Granda, special director of Peru's procurement agency ProInversión, about the challenges and opportunities being faced today in the sanitation sector

Peru is in the process of resuming its PPP programme for water and sanitation concessions, with the Covid-19 pandemic providing greater impetus for procurements.

Karin Granda, special director of projects at ProInversión, speaks here with IJGlobal about the challenges and opportunities Peru faces. The interview was originally provided in Spanish, translated here for an international audience.

JE – How did the Covid-19 pandemic change perceptions towards the need to award sanitation projects in Peru?

KG – The current context has brought to light the impact that the lack of adequate social infrastructure – particularly in water and sanitation services – can have on the well-being of the population.

From the public health point of view, the current scenario of the pandemic highlights the still large gaps in coverage in water and sanitation – taken in context of the washing of hands, clothes and utensils, as well as the adequate collection and treatment of wastewater – that allows a reduction to the exposure of people to various microorganisms that cause diseases. This is not only for the Covid-19 virus, but those associated with acute diarrheal diseases and parasitosis.

In this context, nowadays, sanitation not only takes priority but also ramps up urgency in the execution of projects to expand the drinking water services and sewage treatment.

On the other hand, from the point of view of private investment, given the uncertainty of the immobilization period, there is a greater attractiveness for projects with low or no risk of demand. And it is precisely those associated with basic services – water, sanitation, electricity, gas, education – that are impacted since the government participates in co-financing as long as the infrastructure is available and providing the service under the required quality standards.

Karin Granda



"There are 3.4 million Peruvians who live without access to drinking water in the country and 7.4 million without sewerage. Also, only 44% of the drains enter a wastewater treatment plant."

JE – The sanitation sector in Peru is traditionally dominated by state companies. In which cases is the participation of the private sector through PPPs most relevant, in your opinion?

KG – There are 3.4 million Peruvians who live without access to drinking water in the country and 7.4 million without sewerage. Also, only 44% of the drains enter a wastewater treatment plant.

To close this gap, the development of different types of interventions by the state is necessary. Public provision mechanisms continue to be an alternative in charge of the companies that provide public services.

However, currently the Ministry of Housing, Construction and Sanitation is focused on covering infrastructure gaps with the involvement of the private sector through the mechanism of public-private associations that not only ensure construction of the work but also its sustainability in the long term.

JE – After years without awarding any sanitation projects, Peru in 2019 awarded the wastewater treatment system of Lake Titicaca. Now it has more projects in advanced planning: Puerto Maldonado wastewater and Headworks, part of the potable water for Lima. Could you talk about these projects, and what is the timescale for the bidding processes?

KG – Our projects go through different phases, from planning and development of technical studies to structuring the project as a PPP and the bidding process. The most advanced projects in our portfolio are these three.

The Puerto Maldonado PTAR Project was launched on 17 September (2020). Inquiries to the terms and conditions and suggestions for the initial version of the contract will be received until 19 October. The fulfilment of the prequalification requirements is scheduled for 30 November and the presentation of technical and



3.4 million Peruvians live without access to drinking water



economic offers for April 2021, estimating their award and contract signing for May and July 2021, respectively.

The Headworks and transmission project for Lima includes the design, finance, construction and operation of the infrastructure necessary for the collection, transfer, transmission, production and supply of drinking water for the city of Lima. We are currently in the process of adapting the scope of the project and updating its structure, on which we are being advised by the International Finance Corporation. The concession competition is expected to be relaunched towards the end of the year and to be awarded between June and July 2021.

The WWTP Huancayo project was recently declared viable by the Ministry of Housing, Construction and Sanitation and commissioned to ProInversión for its development as a PPP. We are in the process of structuring it and expect to go to market with the declaration of interest in the second quarter of 2021.

In addition to these projects, there is a package of 11 co-financed private initiative projects that the sector has been formulating. We hope that technical studies are completed soon and we are told to start structuring this portfolio. The total value of the PPP portfolio in sanitation prioritized by the sector exceeds \$1.3 billion.

JE – Regarding the two main projects currently under development, how is the government structuring their revenues to ensure that they are attractive to the private sector and that they can be financed by international private banks? How will the payment system be organized?

“The credit rating of Peru and its history of fulfilling the financial commitments of PPPs generate confidence in the market. We received demonstrations of interest on this type of projects where the Peruvian state is in charge of the income risk.”

Karin Granda, special director of Peru's procurement agency ProInversión

KG – Both in the Headworks Project and in the Puerto Maldonado Project, we have the support of multilateral organizations for the structuring phase, IFC and the Inter-American Development Bank respectively. With them, we are certainly covering the aspects that ensure the bankability of both projects.

In the case of treatment plant projects, they are co-financed projects. This means that the payment mechanism uses public resources, for which the income risk analysis would focus on the state's ability to pay its commitments to payments derived from PPPs. In this sense, the credit rating of Peru and its history of fulfilling the financial commitments of PPPs generate confidence in the market. We received demonstrations of interest on this type of projects where the Peruvian state is in charge of the income risk.

Additionally, the Headworks project has the rates received by the sanitation provider as a source of repayment, with the support of the national government.

Now, in terms of the payment system, we are introducing an internationally-recognised mechanism, the availability payments. The concessionaire will receive its payments as the works provide the expected service. This scheme encourages the concessionaire to carry out good quality work and finish on time,

since their remuneration depends on their construction and the operational performance, and is subject to deductions for service levels.

However, we are introducing a limit to these deductions, so as not to affect the repayment of debt and to be able to contribute to the bankability of projects.

As part of the tests carried out, the financial market has indicated that they have experience in financing with payment mechanisms subject to availability, which has helped us to improve the proposed mechanism.

JE – What is the objective for the other projects that are planned but will be awarded before the elections next year?

KG – The objective of this government for the package of co-financed private initiatives – which includes nine WWTPs, one desalination plant and an integrated rural sanitation project – that are currently being formulated by the Ministry of Housing, Construction and Sanitation is to start the year 2021 with the structuring phase and go to the market with the declaration of interest throughout 2021.

It is important to point out that the development of these projects require multiple efforts from different entities and constitute a long-term state policy.

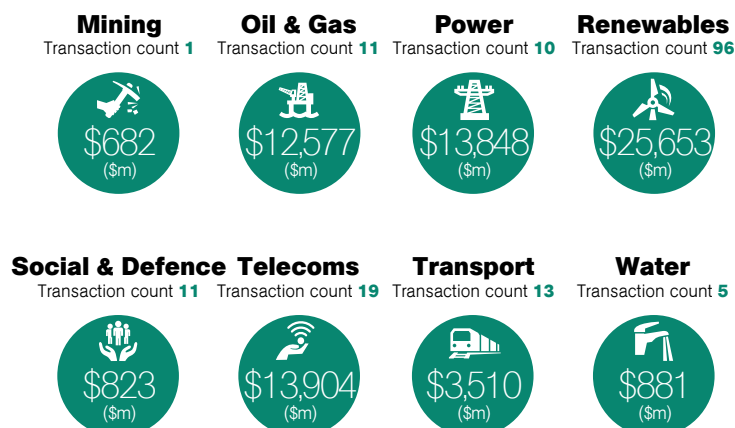


Europe

Tenders launched



Closed deal values by sector



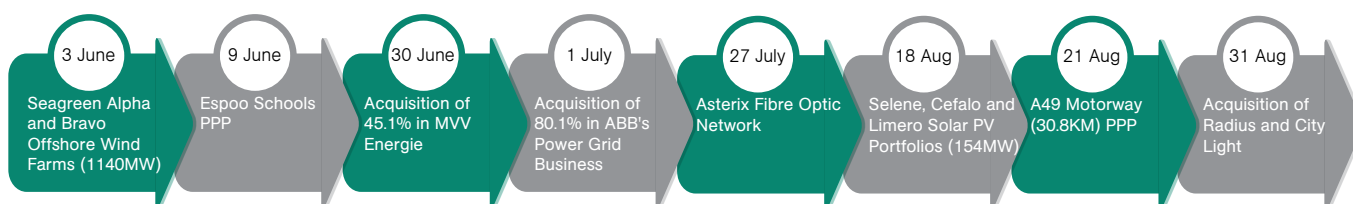
Projects with recent tender updates

1	Canal Istanbul (45KM) PPP
2	UK High Speed 2 Rail (HS2) Phase I
3	East Anglia Three Offshore Wind Farm (1.4GW)
4	Acquisition of 37.5% in Telecom Italia's Last-Mile Grid Assets
5	Gdansk Central Port Expansion PPP
6	Attica-Crete Interconnector (1GW)
7	Acquisition of 50% in Open Fiber
8	Trafford CCGT Power Plant (822MW)
9	Lower Thames Crossing (LTC) (21KM) PPP

Closed deals by country

	Transaction Country	Value (\$m)	Count
1	United Kingdom	24,549	42
2	Switzerland	15,675	3
3	Spain	8,861	36
4	France	7,421	12
5	Germany	3,514	11
6	Denmark	3,406	2
7	Denmark, United Kingdom	2,398	1
8	Italy	2,034	14
9	Netherlands	1,884	8
10	Germany, Netherlands	1,139	1
11	Ireland	1,001	4
12	Russia	682	1
13	Turkey	590	1
14	Luxembourg	500	1
15	Norway	379	1
16	Sweden	338	3
17	Finland	310	2
18	Belgium	304	2
19	Austria	258	3
20	Georgia	250	1
21	Portugal	219	1
22	Hungary	216	2
23	Greece	215	4
24	Poland	194	5
25	Armenia	95	2
26	Lithuania	53	1
27	Moldova	24	1
28	Ukraine	15	2
29	Croatia	12	1
30	Latvia	N/A	1
31	Romania	N/A	1

Transactions that reached financial close





Seagreen Offshore Wind Farm UK

The drawn-out debt raising of the 60% merchant Seagreen offshore wind farm reveals an off kilter future of what kind of financing fully merchant wind financing will require in the future. *IJGlobal* reporter **Sophie Mellor** explores.

The recent debt raise and sell down of the 1.1GW Seagreen offshore wind project was remarkably different from the droves of UK offshore wind farms that preceded it.

Not only did it reach financial close between the 2 peaks of Covid-19 cases in the UK in early June 2020, only 42% of the energy generated at the wind farms was awarded subsidies from the UK government.

As a result of this uncertainty, the debt-to-equity was skewed to be heavily ECA-backed with bank debt only covering the secured contracted revenue and equity footing 58% of the bill.

In the end, the project to be built in Scottish waters in the outer Firth of Forth and Firth of Tay reached financial close concurrently selling down 51% of the equity to French oil major Total.

A brief history

Seagreen was previously owned by Fluor and SSE and first given consent from Marine Scotland to build the wind farm in 2014. Two years later, in 2016, it was among the 2.3GW of Scottish offshore projects in development that lost planning permission as the Scottish courts ruled they presented a risk to wildlife.

However, a legal challenge brought by the Royal Society for the Protection of Birds was appealed in August 2016 and overturned in July 2017.

SSE then opted to exercise its pre-emption right in September 2018 to take full ownership of the 1.5GW Seagreen Alpha and Bravo offshore wind projects from Fluor for £118 million.

Just before the sale, SSE and Fluor submitted plans to Marine Scotland for the project to reduce the number of turbines under the new plan from 150 to 120 – lowering its capacity from 1,500MW to 1,075MW.

CfD results

The third contract for difference (CfD) tender run by the UK's Department for Business, Energy and Industrial Strategy (BEIS) in September 2019 saw heavy competition in the offshore wind category.

With more than 10 bidders, SSE submitted Seagreen Alpha and Seagreen Bravo for state subsidy support and was awarded a £41.61/MWh strike price for 454MW of the first phase of its Seagreen offshore project. MUFG Bank advised on the bid.

With only 42% of the wind farm covered by subsidies, financing proved a challenge with many lenders who lent on previous UK offshore wind farms opting out of the project financing.

To secure future revenue, the sponsors signed a PPA to offtake another portion of the energy produced to reduce the volume sold on a merchant basis.

The revenues of the wind farm are:

- 42% – subsidised by the UK government
- 30% – PPA with SSE
- 28% – sold on the merchant market

With such a low strike price, it is possible the market-rate portion of the project could earn more than the subsidised portion, however, without a government contract, the project lacked the security to bring down overall costs and attract high bank leverage.

Additionally, as the deal was largely structured pre-Covid-19, merchant rates have since dropped to around £30/MWh.

As a result, the sponsors mitigated the risk using low gearing to cover only the subsidised output, providing lenders with more certain cash flow projections, while financing the remainder in equity.

Financing package

The £3 billion Seagreen offshore wind farm is being built with project financing at a 42:58 debt-to-equity ratio.

The £1.3 billion debt package included senior debt facilities provided by 12 banks, with ECAs providing covered facilities to lenders in respect of exports from Norway and Denmark, along with a mezzanine tranche of financing. The lending banks are understood to include:

- AIB
- ABN Amro
- Bank of China
- Barclays
- CaixaBank
- Helaba
- Lloyds
- MUFG
- NatWest
- Rabobank
- Santander
- SMBC

The bank debt has a 19-year tenor. It consists of a £159.5 million generation term loan, a £43.8 million generation revolving credit facility, a £401 million transmission term loan, a £114.67 transmission revolving credit facility, and a £237.7 million ancillary facility.





There were also 2 ECAs providing covered facilities guaranteeing lenders Barclays, CaixaBank, Lloyds Group, NatWest, Santander and SMBC on further packages:

- EKF – £304 million
- GIEK – Nkr1.6 billion (\$172m / £136m)

Lastly, there was a £220 million, 22-year long-term mezzanine financing raised to further leverage the plant with MUFG placing the bond with German institutional investors.

Equity costs

European energy companies have increasingly looked to oil majors to capitalize on the global energy transition with their scale and skill to finance multi-billion-dollar offshore projects.

As a result, French oil and gas giant Total seemed the right fit to acquire a 51% stake in Seagreen for £70 million with earn-outs up to £60 million, subject to attaining performance conditions.

Total's equity investment is £900 million, which it will finance with 70% debt.

The 51% stake in the wind farm includes an equivalent stake in a potential extension at the site of up to 360MW.



SSE, on the other hand, has already invested £250 million into Seagreen which will be released through the project financing. Its future equity investment is estimated at £850 million – £50 million of which is being deployed in 2020. SSE is also understood to be financing its equity portion through debt financing.

The margins for the lending on the equity and debt portions have been arranged at the same rate.

The site

Seagreen is sited 27km from the Scottish coast and will have a 1.075GW capacity and generate 5,000GWh of electricity

annually. It has secured all necessary major permits and onshore construction began in Q1 (2020), to reach operations in 2023.

SSE will lead development and construction of the asset, as well as provide O&M services once operational.

The wind farm will have 114x 10MW MHI Vestas V164 turbines. Seaway 7 has been selected to install the inter-array cables and foundations. Petrofac was previously chosen to install the substations and Nexan was to manufacture and install export cables.

Advisers

Sponsor advisory team

- MUFG – financial adviser for debt financing
- Jefferies – financial for equity sell down
- Linklaters – legal for financing and equity sell down
- Mott MacDonald – technical
- Benatar & Co – insurance
- BDO – model audit

Lender advisory team:

- Norton Rose Fulbright – legal (and to Total on equity acquisition)
- EIG Global Energy Partners – financial on mezz tranche



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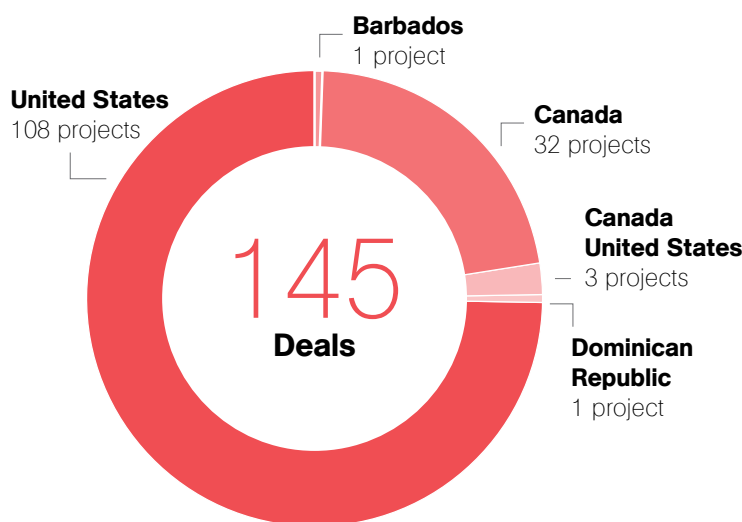
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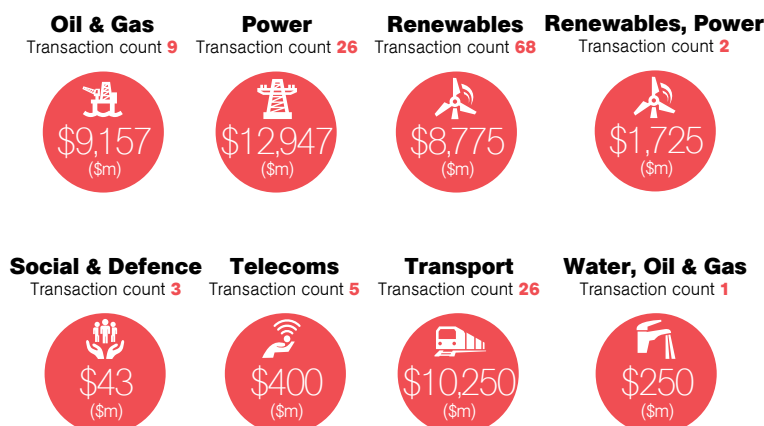
Tenders launched



Projects with recent tender updates

1	Acquisition of a Stake in Montgomery County CCGT Power Plant (993MW)
2	Eastern Ontario Fiber Optic Broadband PPP
3	Portal North Bridge
4	Hospital Vaudreuil-Soulanges Redevelopment PPP
5	Acquisition of Castle Gap Wind Farm (196MW)
6	Acquisition of Vivint Solar
7	Honolulu Rapid Transit PPP
8	Acquisition of Dominion Energy's Gas Transmission and Storage Portfolio

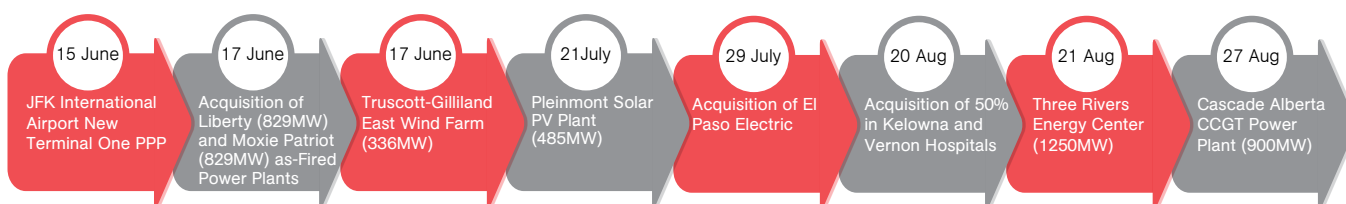
Closed deal values by sector



Closed deals by country

	Transaction Country	Value (\$m)	Count
1	United States	40,505	125
2	Canada	3,755	12
3	Puerto Rico	187	2
4	Canada, United States	75	2
5	Saint Kitts and Nevis	48	1
6	Greenland	N/A	1

Transactions that reached financial close





Hamilton Projects Acquiror, Pennsylvania US

The future of Panda Power Funds' Patriot and Liberty combined-cycle gas-fired plants have been secured – although getting Carlyle and EIG's acquisition over the line had its challenges. **Taryana Odayar** investigates a deal that ended years of speculation.

The Carlyle Group and EIG Global Energy Partners' deal to take ownership of Panda Power Funds' Patriot and Liberty combined-cycle gas-fired plants in Pennsylvania ended years of speculation about the fate of the plants. But the story did not end there as the buyers launched the acquisition financing into a market roiled by coronavirus.

Panda, which originally financed the 2 projects with senior and mezzanine debt in 2013, had been looking for a refinancing solution since 2018, when the plants began to breach debt covenants and suffer credit rating downgrades, and as the sponsor came under financial pressure itself.

The deal between Carlyle and EIG, which emerged at the beginning of 2020, solved several problems at once:

- Panda would be able to dispose of the assets
- the senior lenders would be repaid
- the mezzanine lender, EIG, would be able to preserve some value and continue to participate in the projects as equity
- Carlyle would add stakes in 2 relatively new and efficient CCGTs to its portfolio

As part of the arrangements, Carlyle and EIG made equity cures of about \$5 million at each of the 2 plants to keep them going. All that remained to be done was to raise

fresh debt in the leveraged loan market. Morgan Stanley was appointed as left lead on a \$900 million term loan B, dubbed Hamilton Projects Acquiror, and the deal was readied for launch.

Choppy waters

During the last week of February (2020) and the first week of March, pre-marketing meetings were held with a small number of key term loan B investors before initial price thoughts were floated between 400bp and 450bp over Libor.

"We did a lot of pre-work before the launch to create a greater certainty of success," says Jim Larocque, the Carlyle





managing director who oversaw the acquisition and financing. "We were strategic and selective in our approach to pre-marketing the deal, focusing on a smaller group of investors that could speak for a larger portion of the deal."

The group is understood to have included an anchor investor out of South Korea. But before the deal could close, it would have to navigate the fallout of a global pandemic.

"Things went from feeling normal to very abnormal in the span of about a week, causing us to put the deal on pause for several weeks," says Larocque.

The purchase agreement with Panda was flexible enough to give Carlyle and EIG a fairly long runway to complete the deal, though the maturity of Liberty's existing debt was looming in August 2020.

In April and May this year, data trickled in showing the impact of the pandemic on power assets in PJM, which Carlyle was able to turn into an unlikely selling point.

"The early read was that power demand was off somewhere in the high single digits in percentage terms," says Larocque. "At first that seemed concerning, but ultimately, given the extent of the economic shutdown, what it demonstrated was the resiliency of these assets even in the face of an unprecedented economic shock."

Another tailwind, when the market eventually reopened, was the lack of competing supply, which made it easier for Hamilton to catch the attention of starved term loan B investors.

Even so, given the circumstances, it was to be expected that the pricing would widen. The question was by how much. And the fact that there were not any recent comparable financing deals to point to made that question more difficult to answer, says Larocque.

On 2 June, Morgan Stanley launched the deal at a wider starting point of 500bp and with a generous original issue discount (OID) of 96 to 97. The deadline for commitments was 10 June.

Resilience

The debt package comprised:

- \$900 million 7-year term loan B
- \$115 million 5-year revolver

The term loan is pre-loaded with a \$100 million accordion feature.

Moody's Investors Service assigned the deal a B1 rating, while S&P Global Ratings scored it a notch higher at BB-.

The deal was nearly 2 times oversubscribed, allowing Morgan Stanley to tighten the pricing back up to 475bp and set the final OID at 97, producing an all-in yield of around 6.45%. Tickets were allocated on 11 June.

The bookrunners were Morgan Stanley, BNP Paribas and Credit Suisse.

Advisers on the acquisition and the financing:

- Houlihan Lokey – financial adviser to EIG
- Vinson & Elkins – legal adviser to Carlyle and EIG (financing)
- Debevoise & Plimpton – legal adviser to Carlyle and EIG (M&A)
- Latham & Watkins – legal adviser to Panda
- Milbank – legal adviser to the lenders

The new equity in the 1.7GW Hamilton portfolio totals roughly \$671 million, comprising cash equity from Carlyle and the conversion of EIG's mezzanine capital.

"What this transaction shows is that deals can get done in this environment, so ultimately it should bolster confidence," says Larocque. "Completion of the Hamilton financing provides better clarity on where

Jim Larocque



"Completion of the Hamilton financing provides better clarity on where pricing is in this environment, something that we didn't have when we launched the deal in June."

pricing is in this environment, something that we didn't have when we launched the deal in June."

Even so, sources close to the deal say the term loan B market is unlikely to be very active following early September's Labor Day, simply because there aren't many transactions on bankers' M&A calendars that require financing.

Apart from the pandemic, long delays to the PJM capacity auction process and a lack of buyers entering the independent power space are given as explanations for the lackluster M&A schedule.

"Many buyers are waiting on the sidelines to see where capacity prices shake out before participating in new M&A transactions," says Larocque. "In the very few M&A deals that have gotten done recently, they've been done primarily by sponsors with dedicated power sector expertise like us."

The deal, meanwhile, between Carlyle and EIG could serve as a template for alternative restructurings of Panda's other quasi-merchant gas-fired assets in Texas and PJM, some of which were also financed with mezzanine capital.

Patriot power plant





Aviator Wind, Texas US

Ares Management Corporation's 525MW Aviator wind farm in Texas had to navigate some Covid-related turbulence, but the private equity firm was ultimately able to bring on board a pair of very different buyers to land the deal safely in August. By **Shravan Bhat**.

Take off

Ares demonstrated its full suite of skills by acquiring the super-sized wind farm, putting the finishing touches to offtake arrangements, procuring turbines and financing the project in 2019. It then sold the wind farm on to Michigan-based utility holding company CMS Energy and Japan's Kansai Electric Power Co in the middle of a global pandemic.

Apex Clean Energy originally developed the Aviator project in Coke County under the name Grape Creek Wind before welcoming Ares into the cockpit.

"The project was in late-stage development when Ares-managed funds got involved, with permits mostly secured but the commercial structure not yet in place," said Keith Derman, co-head of Ares Infrastructure and Power.

The commercial structure began to take shape in September 2019, when a 200MW power purchase agreement was announced with Facebook.

The same month, McDonald's USA bought a further 220MW portion of the project's output. The contract was the result of a tender run by the fast food franchise, into which Apex had bid on the project.

The Facebook PPA placed more demands on the project than the McDonald's contract, according to deal watchers, who have attributed this to Facebook's greater experience with renewable energy procurement. For McDonald's, the Aviator deal was its first PPA in the US.

While Ares and Apex worked together on the negotiation of the PPAs and EPC contract, Ares took the lead on the procurement of turbines – including long-term O&M service – and the financing.

Cruising altitude

By the third quarter of 2019, Berkshire Hathaway Energy had signed a more-than-\$400 million tax equity commitment, while Santander had agreed to provide construction debt priced at just Libor +87.5bp.

"The project was in late-stage development when Ares-managed funds got involved, with permits mostly secured but the commercial structure not yet in place."

Keith Derman, co-head of Ares Infrastructure and Power

"It was a large tax equity investment and this is where Berkshire can distinguish itself, because there's a limited audience of people that can put that type of money into a single Ercot project," said a person familiar with the transaction.

Besides its appetite for whopping deals, Berkshire is also said to be a more nimble tax equity investor than the bulge-bracket





investment banks, because its affiliate, MidAmerican Energy, owns and operates a massive wind fleet of its own.

It is also less worried about concentrated regional or single-site exposure than financial investors have traditionally been, the source added.

Established relationships between the various financing parties helped the debt and tax equity close without much difficulty, sources say. For instance, Berkshire is said to have had a positive experience with the Ares team on the 430MW Phoenix wind repowering in Texas in 2018, which was a more complex transaction.

"This was more straightforward," the source claimed. "There wasn't anything particularly nettlesome about the project and it was executed smoothly, relative to others."

Santander, too, had worked before on tax equity take-outs with Berkshire, which gave the underwriter added comfort. The Spanish bank was one of the lenders on Clearway Energy Group's 419MW Mesquite Star project – another large Ercot wind farm with corporate offtakers.

The \$456 million Aviator financing package closed on 30 August 2019, and advisers included:

- CCA Group – Ares financial advisor
- Latham & Watkins – Ares legal counsel
- Winston & Strawn – lender counsel
- Husch Blackwell – local counsel
- Gibson Dunn & Crutcher – tax equity counsel
- Sargent & Lundy – independent engineer

With debt financing in place, Ares went in search of buyers for the equity. At a breakfast meeting in late fall last year, Ares managing director Steve Porto met Rajesh Swaminathan, vice president of business

development at CMS Energy's competitive renewables arm, CMS Enterprises. Before long, CMS was sizing up the project, guided by law firm Pillsbury and technical adviser Black & Veatch.

Turbulence

With CMS interested in the majority equity share, Ares reached out to an investor it had previously brought into its St Joseph combined-cycle gas-fired plant – Japanese regional utility Kansai. It would be Kansai's debut US renewables investment.

Everything was lining up nicely. Then, along came coronavirus.

"We started doing our diligence and then Covid hit and no one was really sure about what would happen, since it was a cross-border deal and there were tight timelines on the tax equity," says Mona Dajani, co-head of Pillsbury's energy and infrastructure projects team, and long-time counsel to CMS.

Things were looking difficult in April (2020) and the would-be sponsors had to press pause, talk to their management teams internally and take stock.

"From supply chain to labor issues to financial market turmoil – certain issues that one considers 'run of the mill' suddenly became major risks," says Swaminathan. "I give Ares credit because they worked with us and it wasn't easy. Ultimately, it was 2 parties who are highly experienced, having done this before, and hence could walk through these issues together."

Final descent

The project was well positioned to withstand the chaos, Ares having already accelerated turbine delivery in anticipation of expected supply chain constraints in 2020 – tipped to be one of the biggest years for wind deployment in the US.

Mona Dajani



"We started doing our diligence and then Covid hit and no one was really sure about what would happen, since it was a cross-border deal and there were tight timelines on the tax equity."

Another boost came late May 2020, when the Internal Revenue Service extended the safe harbour deadline for wind developers looking to capture the production tax credit.

Working with a 13-hour time difference, the parties shepherded Kansai toward its debut US renewables deal. Norton Rose Fulbright served as Kansai's legal counsel. "In the end, there were lots of last-minute changes and we found creative ways of keeping everyone happy," said Pillsbury's Dajani.

"One of the nice things was that Steve [Porto] and I – as well as our teams – had met in person several times in the interim before travel got shut down and so it wasn't difficult to put a face to a name," Swaminathan added. "We had also visited the site and started diligence before the travel restrictions came in."

The final ownership structure was 51% CMS, 48.5% Kansai and 0.5% to Ares Energy Investors Fund V.

With its 191 General Electric turbines expected to come online in the autumn this year, Aviator will be the largest single-phase, single-site wind project in the US.



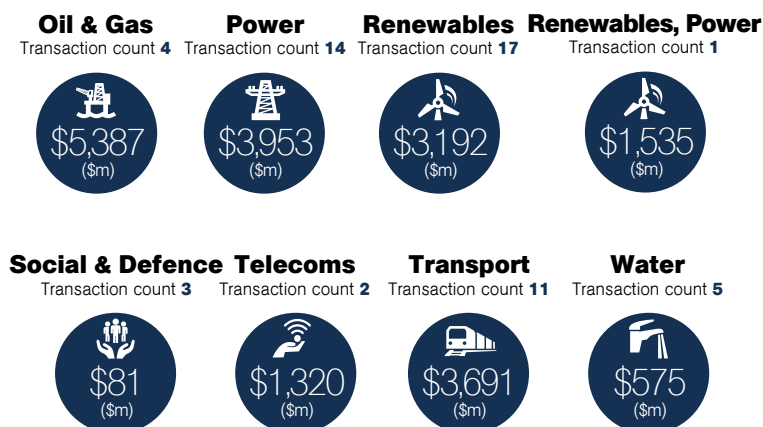


Latin America

Tenders launched



Closed deal values by sector



Projects with recent tender updates

1	Angra 3 Nuclear Plant (1405MW)
2	Sao Paulo - Rio de Janeiro BR-116 Via Dutra Highway (598.5KM) PPP
3	Privatisation of Eletrobras
4	Ituango Hydropower Plant (2400MW)
5	Lima Jorge Chavez International Airport Expansion PPP
6	Estepa Solar PV Plant (577MW)
7	Gunaa Sicaru Wind Farm (252MW)
8	Barcarena CCGT Power Plant (605MW)
9	Brunnen Battery Storage (20MW)

Closed deals by country

	Transaction Country	Value (\$m)	Count
1	Brazil	8,348	28
2	Chile	5,515	12
3	Mexico	2,301	4
4	Colombia	1,644	4
5	Panama	1,535	1
6	Peru	642	4
7	Ecuador	280	1
8	Uruguay	161	2
9	Argentina	50	1
10	El Salvador	8	1

Transactions that reached financial close





ENova solar portfolio, Mexico

Since Mexico's President Andrés Manuel López Obrador took office 2 years ago, private investment in renewables in the country has been rocky, as **Carmen Arroyo** explains.

In early June, Semptra Energy subsidiary IEnova reached financial close on a 376MW 4-project portfolio of solar assets in Mexico, even as the country's renewable energy sector grappled with delays, a hostile government and a financing environment that many considered impossible.

Since President Andrés Manuel López Obrador (AMLO) took office in December of 2018, private investment in renewable energy projects in Mexico has been increasingly imperilled. During the past 2 years, Obrador's government has prioritised state ownership over private investment and promoted fossil fuels at the expense of wind and solar.

This strategy reached its peak in the past 3 months when the administration adopted policies to limit the development of renewable energy projects. Grid operator CENACE halted the interconnection of wind and solar assets, leading to potential losses for private companies holding power purchase agreements, and the Secretariat of Energy introduced further measures to limit development.

Both policies have since been suspended, as developers have won temporary reprieves in court, but projects have remained paralysed and project financings have virtually halted.

Prospective investors say they have halted assessments of potential assets in the country, while sources say those with existing positions are in some cases looking for a way out.



"Everybody believes in the fundamentals of the country, but the changes in policy are making it very difficult to stay," said an industry insider in Mexico City. "As long as AMLO is in power, things are not going to improve," added a second market participant.

As if that were not enough, the combination of the coronavirus pandemic and the oil price slump have prompted Fitch Ratings to downgrade Mexico's sovereign credit rating from BBB to BBB-, further complicating deals for developers, who fear additional downgrades.

Amid all this, IEnova – which also suffered a credit rating downgrade – appears to have achieved the impossible, though largely by relying on financing from development finance institutions instead of commercial banks.

On 10 June, the sponsor closed a \$541 million 15-year debt package for its 4-project portfolio after months of negotiations.

The financing

The deal had been in the works since April 2019, when IEnova reached out to banks to raise \$395 million for its solar portfolio. By November the same year, the sponsor had secured \$200 million from the International Finance Corporation (IFC) and the North American Development Bank (NADB) – \$100 million each.

NADB's \$100 million portion was earmarked for just 1 of the projects – the 125MW Don Diego solar asset in Sonora.

"We are very pleased to receive the first loan certified under the Green Loan Principles that IFC grants to a company in Mexico," said Tania Ortiz, chief executive of IEnova in a statement on 19 November 2019.

"With this project, Sonora is becoming one of the top producers of solar energy in Mexico and thus helping the Mexican government reach its renewable energy goal," added Calixto Mateos-Hanel, NADB's managing director.

However, as the loan was not large enough to finance the whole portfolio, IEnova continued talks with other multilaterals, and on 2 March this year, Japan International Cooperation Agency (JICA) joined the financing with a \$100 million ticket, its first-ever green loan

Tania Ortiz



"We are very pleased to receive the first loan certified under the Green Loan Principles that IFC grants to a company in Mexico."

and its first private investment in Mexico since 2012. Rounding out the deal, the US International Development Finance Corporation (DFC) approved a \$241 million long-term financing on 13 March.

This was just a month before Mexico's sovereign rating was downgraded, with knock-on downgrades for IEnova. On 17 April, Fitch downgraded the company from BBB+ to BBB, while Moody's Investors Services took it down a peg from Baa1 to Baa2.

Moody's said the downgrade reflected "the deterioration in the creditworthiness of IEnova's government-related counterparties, including and Pemex."

CFE had been downgraded from BBB+ to BBB a month earlier by S&P Global Ratings to reflect "a pronounced hit to the Mexican economy following the combined shocks of COVID-19... and lower oil prices".



Despite the downgrades, IEnova's signed project finance loans proceeded to financial close on 10 June and the proceeds were disbursed the same day.

Advisers included:

- Allen & Overy (A&O) – lenders' international counsel
- Ritch Mueller – lenders' local counsel
- Latham & Watkins – sponsor's international counsel
- Gonzalo Calvillo – sponsor's local counsel

Partner Sami Mir led the A&O team, while Jean Paul Farah Chajin and Alejandra Echevarria Gonzalez from Ritch Mueller advised the lenders.

The IEnova portfolio comprises 4 projects, with various offtakers, including non-utilities and CFE (see table for details).

What next?

IEnova owns several other renewable energy assets in Mexico, 2 of which are operational and 2 which are under-development, which could still be impacted by Obrador's reforms.

IEnova Mexico solar portfolio

Project	State	Size	Status	Contract
Prima Solar	Sonora	110MW	Operational	Contracted with steelmaker Deacero for 20 years
Rumorosa Solar	Baja California	41MW	Operational	Contracted in 2016 Cenace auction for 15 years
Tepezalá Solar	Aguascalientes	100MW	Operational	Contracted in 2016 Cenace auction for 15 years
Don Diego Solar	Sonora	125MW	Under construction	Contracted for half of the output with El Puerto de Liverpool for 15 years

One of the projects under development is the 150MW Border Solar plant in Juarez, Chihuahua, for which the sponsor has signed PPAs with packaging company Envases Universales de México and retailers Comercializadora Círculo CCK and El Puerto de Liverpool. The \$160 million project is expected to be brought online by late 2020.

The other is the 108MW Sierra Juárez II wind farm in Baja California, which is said to be nearing financial close. The project

is a joint venture with Saavi Energia. Unlike the 4-project portfolio that was already financed this year, the Sierra Juárez II project is being financed with the help of commercial banks. The lender group comprises NADB, Mizuho and Sumitomo Mitsui Banking Corp.

However, the project benefits from a cross-border PPA with California utility San Diego Gas & Electric, somewhat insulating it from the turmoil in Mexico.

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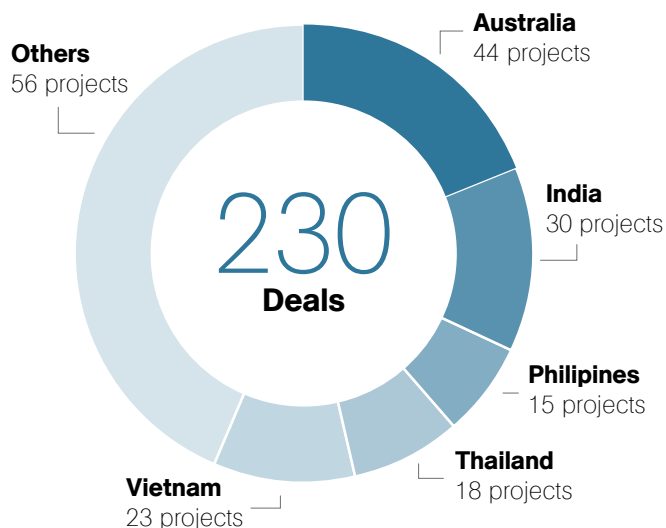
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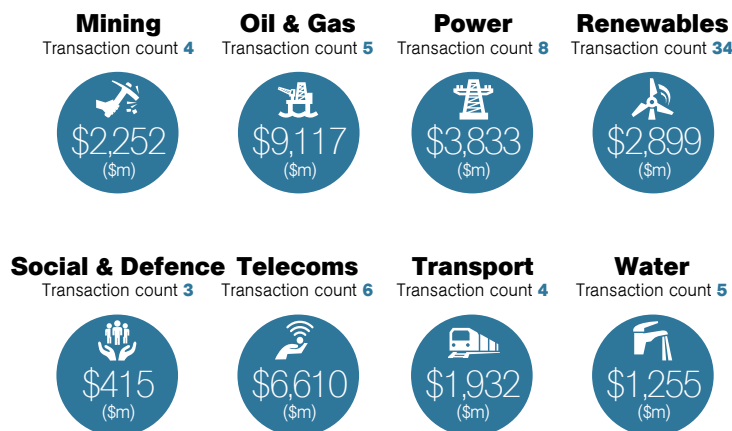


Asia Pacific

Tenders launched



Closed deal values by sector



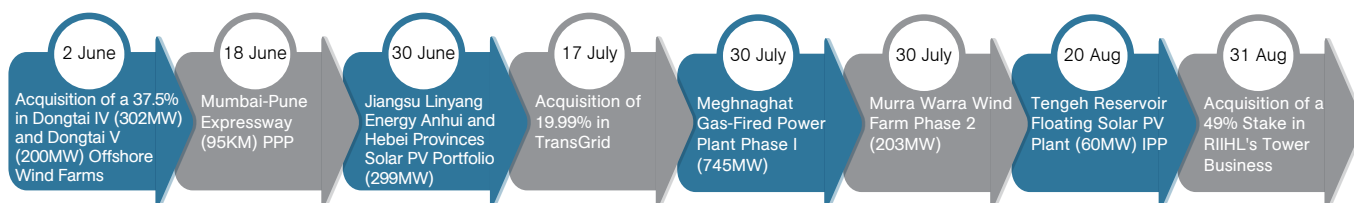
Projects with recent tender updates

1	Kuala Lumpur-Singapore High-Speed Rail (350KM) PPP
2	North Jeolla Offshore Wind Farm Phase III (2GW)
3	Bac Lieu LNG Power Complex (3.2GW) and Gas Pipeline (35KM) Portfolio
4	Bataan-Cavite Long-Span Bridge (32KM) PPP
5	Java 9 (1GW) and Java 10 (1GW) Coal-Fired Power Plants
6	Bangkok Orange MRT East Line (22.6KM)
7	Ninoy Aquino International Airport Renovation PPP
8	Azad Pattan Hydropower Plant (700MW) IPP
9	Cypark Marang Solar PV Plant (100MW)

Closed deals by country

	Transaction Country	Value (\$m)	Count
1	Australia	13,477	19
2	India	8,310	14
3	Bangladesh	1,183	1
4	China - Mainland	1,454	6
5	Vietnam	938	5
6	Kazakhstan	743	2
7	Singapore	609	4
8	Thailand	553	3
9	South Korea	500	1
10	Philippines	443	4
11	Japan	194	7
12	New Zealand	171	1
13	Uzbekistan	102	2
14	Indonesia	66	2
15	Malaysia	62	1
16	China - Chinese Taipei	N/A	1

Transactions that reached financial close





Almaty Ring Road PPP

Kazakhstan

The DFI-backed ring road comes full circle. *IJGlobal's* **David Doré** reports on Central Asia's breakthrough PPP transaction.

The Kazakh tenge has been volatile and eventually collapses 50% against the US dollar just days before the selection committee opens the financial bid envelopes to develop the Almaty Ring Road PPP project, or BAKAD PPP. It is November 2015 and bidders are increasingly anxious.

"The concession committee showed great leadership by conducting open dialogue with pre-qualified bidders and eventually decided to proceed with the tender despite the increased uncertainty," said European Bank for Reconstruction and Development (EBRD) chief spokesperson for the region, Anton Usov.

Fast-forward 57 or so months and the project company on the 66km ring road around Almaty, Kazakhstan, on 6 August (2020) reached financial close on a \$585 million debt financing, following nearly 7 months of clearing conditions precedent.

Usov noted: "Reaching financial close during the pandemic was the best moment during the transaction. Also, the project created significant employment opportunities in the Almaty region, which is important in these difficult times."

In between, 5 shortlisted consortia – with members hailing from Asia and Europe – battled for the 20-year concession; 2 development finance institutions (DFIs) dropped out as lenders; and something called severe acute respiratory syndrome coronavirus 2 landed like an orchestra, inspiring In the Time of Plague, a poem by Pulitzer Prize-winner N Scott Momaday.

Commercial close

Kazakhstan's Ministry of Industry and Infrastructural Development, the project's executing agency, shortlisted 5 consortia in April 2015:

- IC Ictas (Turkey), Astaldi (Italy), Intertoll (Hungary)
- Vinci (France), BI Group (Kazakhstan)
- Corsan (Spain), Gulsan (Turkey), Egis (France)
- CITIC (China), KazStroiServis (Kazakhstan)



- Alsim Alarko Sanayi Tesisleri (Turkey), Makyol Insaat Sanayi Turizm (Turkey), SK Engineering and Construction (South Korea) and Korea Expressway Corporation (South Korea)

The ministry in December 2017 chose the Turkish / Korean consortium as preferred bidder and signed the 20-year, availability-based concession agreement in February 2018.

The equity holders of BAKAD Investment and Operation LLP, the project's special purpose vehicle, are:

- Alsim Alarko Sanayi Tesisleri – 33.3%
- Makyol Insaat Sanayi Turizm – 33.3%
- SK Engineering and Construction – 33.3%
- Korea Expressway Corporation – 0.10%

Usov added: "It is common in project finance deals of such nature that part of the SPV equity interest may be sold following the completion of works and subject to the project meeting certain conditions."

Equity contributions by the project company's shareholders have allowed construction works to be underway for the past 18 months, according to EBRD.

However, the EBRD spokesperson cautioned: "Despite extensive environmental as well as health and safety safeguards that are put in place as part of the project, the impact of the Covid-19 pandemic on construction works is difficult to predict."

Financial close

The \$742.6 million road PPP project has 79% gearing. DFIs dominate the \$585

million limited recourse project financing – with a full pass-through of engineering, procurement and construction (EPC) and operational and management (O&M) risks to the relevant contractors – as follows:

- EBRD – \$350 million
 - \$225 million – A loan
 - \$125 million – B loans
 - \$100 million – Bank of China
 - \$25 million – PGGM
- Eurasian Development Bank (EDB) – \$135 million
- Islamic Development Bank (IsDB) – \$100 million

Each facility has a 15-year tenor, with the SPV to use the proceeds on a pro-rata basis to finance all project costs.

Debt pricing is fixed or hedged.

"A bespoke hedging structure involving interest rate swaps forwards and interest rate caps to accommodate project needs was the most innovative feature of the financing structure," Usov told *IJGlobal*.

Lenders designed a "bespoke installment sale structure developed to meet Islamic Development Bank's specific shariah requirements within local law and transaction constraints", according to lenders' legal Allen & Overy.

Asian Development Bank (ADB) and IFC had intended to be lenders but ultimately dropped out. "ADB has gotten disengaged by the project's sponsors," a source inside the multilateral told *IJGlobal* in June. "We are no longer involved in it."



"All of the CPs were difficult to reach," confided Usov. "Right after the signing in February 2020 the Covid-19 pandemic broke out. The financial close was achieved remotely following hundreds of hours of V/C negotiations across 9 time zones, and the execution of over 50 different financing and project agreements by correspondence."

Head of IsDB's PPP division Noman Siddiqui commented: "...The negotiations to conclude the financing for this high-profile project took enormous efforts from the joint teams of the senior lenders, and their legal and technical advisers, and IsDB is extremely pleased to have successfully achieved the financial close for this high profile PPP concession."

Noman Siddiqui, IsDB



Impact

Almaty Ring Road is a massive project for the 18-plus million people in the world's largest landlocked country. The road is part of the transcontinental highway linking Western Europe to Western China. The scale is:

- 9km of 4-lane expressway in the first and the last sections
- 57km of 6-lane expressway in the other sections
- 21 bridges
- 19 viaducts and other elevated structures
- 8 junctions
- 1 railway truss

EBRD president Suma Chakrabarti in a speech before the Kazakhstan Senate in March (2020) described the PPP project as "the region's first proper PPP and, not surprisingly, the project finance world has been following its progress very closely".

White & Case partner Maxim Telemtayev, who co-lead the sponsors' legal advisory team, added: "This is the first infrastructure public-private partnership of its type and magnitude in Kazakhstan and Central Asia and is also the first significant privately financed project outside the oil and gas sector in Kazakhstan."

"It demonstrates that a private sector financing of this scale, with a significant

national economic impact, can be closed successfully during the time of economic slowdown due to the global pandemic."

Maxim Telemtayev, White & Case



Deputy chairman of EDB's management board, Amangeldy Issenov, emphasised: "The BAKAD project will not only create cutting-edge opportunities for Almaty but also improve the reliability of the existing transport corridor. Building new roads is an important area of EDB's work in our countries."

Amangeldy Issenov, EDB



"The project is the first road concession to be awarded and the first republican-level PPP project in Kazakhstan structured with the involvement of international advisers and through an open, international competitive process," noted the EBRD spokesperson.

"...The project is the first of its kind in the CIS and will serve as an excellent benchmark for international investors to exploit PPP models for infrastructure projects in the region in the near future," added Himmatilla Boriev, IsDB's Almaty Ring Road portfolio manager.

Moving forward

London-based Allen & Overy partner Lorraine Bayliss said: "We are proud to have advised the international development banks and to have been part of the successful closing of this highly complex financing during an unprecedented time for the global economy."

"This transaction will put Kazakhstan firmly on the map for future international investment, and enable increased regional and international trade both within Kazakhstan and between Europe and Asia," she added.

Lorraine Bayliss, Allen & Overy



"The project has strategic importance for project finance in Kazakhstan and beyond," shared Usov. "The government of Kazakhstan has adopted the Law on Concessions and streamlined numerous other laws and sub-laws to improve the bankability and facilitate the development and delivery of PPP projects."

Project participants expect the Almaty Ring Road to boost private sector investment in Kazakhstan's PPP pipeline across other sectors of the economy, including urban transport, healthcare and airport infrastructure.

BAKAD Investment and Operation anticipates starting operations in 2024.

Advisers

Advisers during the financing phase were as follows.

Sponsors' advisers comprised:

- White & Case – legal
- Aon – insurance
- Kazdor Innovatsiya – engineer design

Lenders' advisers were:

- Arup – technical and E&S
- Allen & Overy – legal (international)
- Aequitas – legal (local)
- Willis Tower Watson – insurance
- PwC – model auditor

Advisers to the Government of Kazakhstan during the commercial-close phase were:

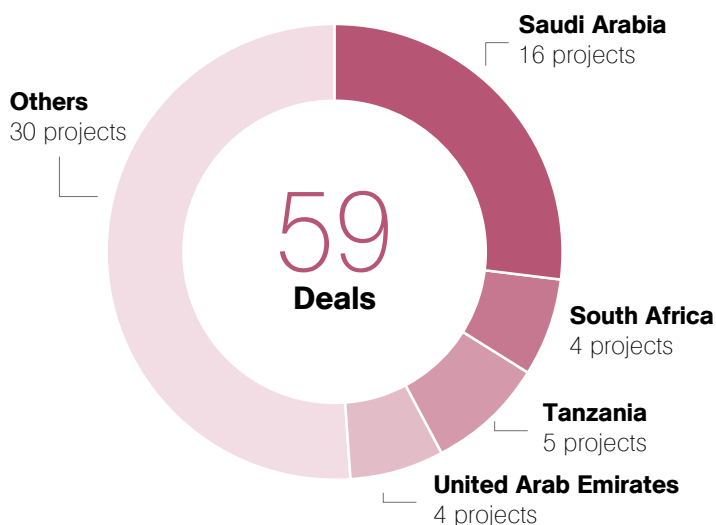
- IFC – financial and transaction
- Gide Loyrette Nouel – legal (international)
- Colibri Law – legal (local)
- Seco International – technical

Environmental Resources Management was ADB's environmental adviser.



Middle East & Africa

Tenders launched



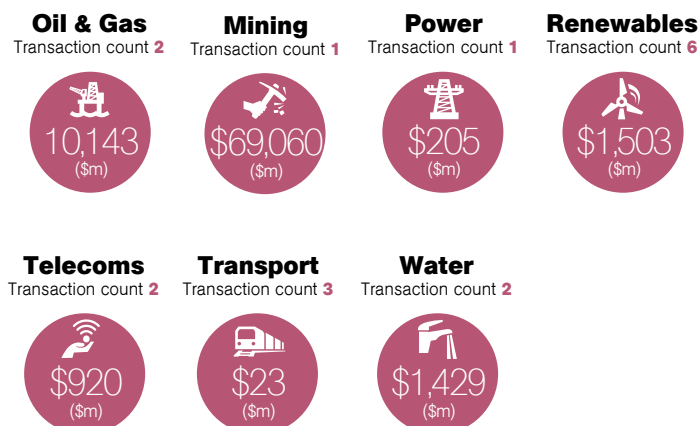
Projects with recent tender updates

1	Ibadan Inland Dry Port PPP
2	Nairobi Central Railway Station Redevelopment PPP
3	Privatisation of Ras Al Khair Integrated Power & Desalination Plant (2650MW)
4	Mphanda Nkuwa Hydro Power Plant (1300MW) IPP
5	Gulf of Suez Wind Farm (500MW)
6	Mahenge Graphite Mine
7	Az Zour North 2 IWPP (2700MW)
8	Benga Coal-Fired Power Plant (400MW)

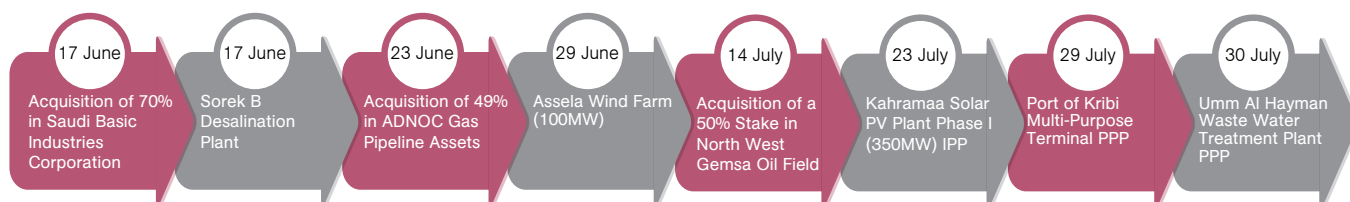
Closed deals by country

	Transaction Country	Value (\$m)	Count
1	Saudi Arabia	69,060	1
2	United Arab Emirates	10,760	3
3	Kuwait	865	1
4	Democratic Republic of the Congo, Ghana, South Africa, Tanzania	750	1
5	Israel	564	1
6	Qatar	467	1
7	Egypt	255	2
8	Gabon	205	1
9	Senegal	170	1
10	Ethiopia	164	1
11	Mali	20	1
12	Ethiopia, Sudan	3	1
13	Cameroon	N/A	1
14	Jordan	N/A	1

Closed deal values by sector



Transactions that reached financial close





Al Kharsaah solar PV first phase Qatar

IJ Global reporter **James Hebert** takes a closer look at the first phase of the Al Kharsaah solar PV in Qatar – the first large-scale solar PV in the country to reach financial close in July.

A consortium led by Marubeni and Total have closed on the first phase of its 800MW solar PV with a low tariff of \$0.01449 per kilowatt hour that has helped to push the cost of renewable energy further down in the midst of the Covid-19 pandemic.

The sponsors and the implementing authority – Qatar General Electricity & Water Corporation (Kahramaa) – have a claim for setting the world record for a low solar price based on levelised energy cost (LEC).

Power and water developer Marubeni led on the sponsor side and drew together a pair of Japanese lenders for the \$330 million debt package to finance the first phase of 350MW.

Al Kharsaah is also the first large-scale solar PV in Qatar to reach financial close and is expected to be completely online in 2022.

Tendering

Kahramaa appointed an EY-led advisory team before 31 January 2018 for a new utility-scale solar project located 80km west of Doha with a potential capacity of at least 300MW and as much as 500MW.

The tender for the build, own, and operate (BOO) contract kicked off in May 2018 and by 1 October that year a total of 16 firms were prequalified for the now stipulated

“Competitive price is evidence for the trust of investors and developers in the Qatari market.”

500MW unit, with a 40% stake up for grabs for the private developer consortium. The issuance of the RFP came about in February 2019 and within time a trio of prequalified bidders were in the lead:

- Engie
- Jinko Solar
- Marubeni

The reason for the thinning out of prospective firms – 16 shaved down to the low single figures – was because of local political tensions between Qatar and neighbouring states.

Most prominent of companies missing from the bidding were Saudi Arabian developer ACWA Power and Abu Dhabi-based Masdar – 2 regional giants in the MENA solar market.

Five RFP responses were received in August 2019 with bidders now partnering up for the occasion. Marubeni was now

bidding alongside French energy developer Total. Moreover, the scale of the project was increasing yet again up to 700MW, and up to a rumoured 850MW. However, this figure would be moderated to 800MW of installed power capacity at the start of the new year in 2020.

The Marubeni/Total team was reported by *IJGlobal* to be the preferred bidder by the end of 2019 and this was confirmed the following month with the signing of a 25-year power purchase agreement (PPA) between the sponsors and Kahramaa on 20 January 2020. The winning price was QR 0.0636 (\$0.01745) per kilowatt hour, but this would be lowered upon financial close 6 months later. Payments on the offtake consist of a fixed and a variable charge.

The shareholding of the project company Siraj-1 is:

- Siraj Energy – 60%
- Marubeni Corp – 20.4%
- Total – 19.6%

Siraj Energy is a joint venture (JV) between Qatar Petroleum (40%) and Qatar Electricity and Water Company (QEWC, 60%).

Financing

The project financing is for the first phase of the project of 350MW, which Kahramaa valued separately at QR 1.7 billion (\$467 million). The \$330 million debt was signed on 13 July and financial close was achieved shortly after on 22 July.

The debt/equity ratio comes out at 71:29, while just 2 lenders took part in the \$330 million debt financing:

- Japan Bank for International Cooperation (JBIC) – \$165 million
- Mizuho Bank – \$165 million

The JBIC said the debt tickets were split equally. The Japanese DFI remarked that its intervention in Marubeni's project was considered part of the government of Japan's "intention to promote expanding orders for infrastructure systems, including the design, construction, operation and management of the infrastructure, as well as increasing investments in overseas businesses".





Conditions precedent were met resulting in a lowering of the tariff from the agreed \$0.01745/kWh down to \$0.01449/kWh on an LEC basis. Kahramaa stated that the “competitive price is evidence for the trust of investors and developers in the Qatari market”.

At the time of the project agreement signing in January 2020, the sponsors had been planning for a May financial close, but 2 months after the signing ceremony took place the World Health Organization declared Covid-19 a global pandemic, which slowed development.

Nonetheless, the project hit financial close in spite of lockdown measures around the world.

The lowest of the low

Al Kharsaah was widely reported to have achieved the world record tariff for solar energy but this claim rests on the basis of LEC and moreover when exactly the market defines that the world record has been set: upon proposal, PB, signing or at financial close?

At the time of proposal and PB status (mid-to-late 2019), the tariff for the large-scale solar project was stated to be \$0.01745/kWh.

However, after all CPs were met for financial close the tariff dipped down to a world record \$0.01449/kWh. The problem here is that in April 2020 an EDF/Jinko Power team had submitted an even lower bid of \$0.0135/kWh at the March readout of prices for the 2GW Al Dhafra solar PV in Abu Dhabi.

A source close to the Al Kharsaah project told *IJGlobal* that, “the Abu Dhabi low tariff claim is based on a really ‘unique’ calculation rather than the established industry practice of LEC”.

This calculation threw off many mathematically-challenged individuals in the media at the time, but as one of the bidders for the Abu Dhabi project explained: “EWEC uses a weird formula WLEC that is not (LEC) but is a weighted average tariff with 4 weights of 1x, 1.3x, 1.6x, and 2.3x over the annual dispatch, so the tariff that is read out is artificially lower compared to a normal (LEC) calculation.”

Bearing these multiplied caveats in mind, the source close to the Al Kharsaah project continued: “I don’t think it will be a surprise to anyone in the industry that their claim will not stack up on the basis of LEC, and Kahramaa’s is actually the world record low tariff based on LEC.”

On 27 July the PPA was signed between EDF/Jinko Power and Emirates Water & Electricity Company (EWEC) for Al Dhafra, and the newly enlarged TAQA confirmed that the \$0.0135/kWh tariff has been established on an LEC basis. So, if you define the world record on the LEC basis alone, Al Kharsaah solar PV held the championship belt for roughly 5 days.

Nonetheless, if you consider everything before financial close to be merely aspirational, then Al Kharsaah continues to boast the world record price.

Al Kharsaah solar PV will generate up to 10% of Qatar’s peak electricity demand when it is fully built out to 800MW. It is expected to be commissioned in full just in time for the 2022 FIFA World Cup which will be hosted by Qatar in December 2022.

Advisers

Kahramaa was advised by:

- EY – financial
- DLA Piper – legal
- Pöyry – technical

The sponsors were advised by:

- Operis – financial
- Bracewell – legal



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