

Issue 375
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Project Finance & Infrastructure Journal



EUROPE
The LSE's new green opportunities

ASIA
Ravenhall Prison refi in Australia

NORTH AMERICA
District heating and cooling in Canada

LATIN AMERICA
Changing dynamics in Brazilian renewables

MIDDLE EAST & AFRICA
Bahrain signs Sitra refinery expansion

**POWER & RENEWABLES
REPORT 2019**



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While fluid asset definitions can be a source of annoyance, they are a sign of a market attracting new types of investors.

Mere categorisation and cheese-fired power

“What’s in a name?” Juliet asks. Given the star-crossed lovers sticky end, it seems the answer is – quite a lot, actually.

Naming conventions and categorisation are intended to bring clarity and understanding, but those working in infrastructure finance could be forgiven for a growing sense of confusion over what exactly it is they do for a living.

Infrastructure as an asset class continues to expand to the far reaches of credibility and terms like ‘green’ and ‘sustainable’ are bandied about with abandon.

Then Iona Capital announces plans to build a biogas plant in Yorkshire that uses the whey from Wensleydale cheese as a feedstock, and it is enough to make you think all rules no longer apply and we are living in a world where anything goes.

But as always, people should try to suppress a natural fear of the new. Our technological environment is evolving fast and creating new opportunities.

Infrastructure has always been a slippery term. A lawyer remarked to me recently that as far as he is concerned, “infrastructure is anything that an infrastructure fund is willing to invest in”.

Few would be quite as cynical but it is certainly true that assets that would not have comfortably fit the definition 10 years ago are happily incorporated into the universe now. Data centres and crematoria spring to mind.

Infrastructure funds are probably not the ones to be setting hard rules because they need to keep definitions broad and their options open. The choice between definition purity and successfully deploying capital is an easy one.

Most would say infrastructure assets still need to be essential facilities or structures that have a monopoly or quasi-monopoly, operate in a regulated environment, and have predictable long-term cash-flows to facilitate leveraged financing structures.

Those fundamental characteristics won’t change but these loose parameters have been stretched to include new and different types of assets, and this will continue to happen. The funding structures of emerging asset classes like energy storage and electric vehicle charging points are still being determined but will likely fall into the infrastructure bucket.

What was once hybrid infrastructure is now likely to be called core-plus, or value-add, or opportunistic. Simply pick your

favoured label. Now we have the core-plus-plus category being used for high yielding fixed income assets.

While you could interpret this segmentation as simply an opportunity for managers to justify higher fees, it is a good example of the ‘mere categorisation effect’.

This theory says that the spread of options has an effect on the choosers’ satisfaction. In the example of a supermarket, a greater number of bread options on the shelf provides a shopper with a feeling of self-determination and a greater satisfaction with their purchase.

If you want to attract new investors to an asset class, best to provide a variety of investment options to give them a greater sense of agency and confidence they are picking a product best suited to their objectives.

With the infrastructure funding gap still yawning, particularly in emerging markets, finding new ways to match investors to assets is a worthwhile cause.

More justified perhaps is annoyance with newer terms connected to combating climate change that are very hard to pin down. Anyone who has looked closely at the investment criteria for green bonds know that ‘green’ is a broad church encompassing many denominations.

The rightly ridiculed Repsol ‘green’ bond, which will fund more efficient upstream oil development, is an obvious example but a lack of clear guidelines is a problem for the whole of this growing market.

‘Energy transition’ and ‘sustainable’ can be similarly vague terms, and while corporates and investors are attracted to these investment opportunities to boost their ESG credentials, they are likely to become more discerning as shoppers.

The mere categorisation effect has been shown to lose its potency once choosers become more familiar with the products.

Thankfully multilateral institutions are working on hard definitions on what ‘green’ and other terms should really mean, which will provide a much needed level of regulation to environmental investing.

In the meantime I look forward to the launch of the first infrastructure fund focused specifically on cheese-fired power plants. ■

Jon Whiteaker
Editor

Briefings

FUNDS

BNP Paribas targets year-end final close on maiden fund

BNP Paribas Asset Management is targeting the end of the year to reach final close on the BNP Paribas European Infra Debt Fund which seeks €500 million (\$553.5 million) in capital commitments.

The manager has not set a hard cap for this fund but is considering adding a number of separately managed accounts that would take the overall strategy to up to €750 million. At present the fund stands at €350 million.

It was launched at the end of 2017 following Karen Azoulay's appointment as head of infrastructure debt within a newly-created private debt and real assets investment group. In January 2018, the fund made its first investment with a €30 million participation in the €650 million loan agreement with Deutsche Glasfaser.

The manager also invested France's Haute-Garonne high-speed broadband project.

CalPERS to invest large ticket for GIP, JP Morgan

California Public Employees Retirement System's board will discuss the pension scheme's proposal for a \$1 billion ticket to a Global Infrastructure Partners managed account on 17 June. The account is called GIP Strategic Alliance SMA I.

The board will also discuss a \$500 million allocation into JP Morgan Infrastructure Investments Fund. This is an open-ended, unlisted investment vehicle managed by JP Morgan Asset Management. It focuses on core and core-plus infrastructure assets in utilities,

transportation and contracted power in the USA, Canada, western Europe and other OECD countries. It was established in 2006 and launched on 1 July 2007. CalPERS's infrastructure portfolio was valued at \$4.3 billion in September 2018. The pension scheme manages \$356 billion in assets across its portfolios.

Basalt Infrastructure Partners mulls fund III

Basalt Infrastructure Partners is starting to prepare the launch of its third generation fund as a seventh deal is imminent for Basalt Infrastructure Partners II. The manager is understood to have signed a US energy deal which would take fund II to being 75% deployed.

Fund III is still at an early stage of conception, but sources said it would target \$2 billion in capital commitments. The new fund will be a follow-on vehicle from its predecessors, targeting mid-market deals in Europe and North America predominantly across energy, transport, utilities and telecoms.

Fund II signed final close in February 2018 at \$1.285 billion. The fund launched at the end of summer 2016 with a \$1 billion target and neared its \$1.3 billion hard cap at final close.

Digital Colony closes maiden fund above hard cap

Florida-based Digital Colony Management on 5 June announced that it closed Digital Colony Partners at \$4.05 billion. Sources previously told *IJInvestor* that the fund launched fundraising in summer 2017 with a target of \$3 billion and a hard cap of \$4 billion.

The manager reached a \$1.4 billion first close in March 2018, followed by an interim close in May which took the fund at \$2.4 billion. The fund was launched by Digital Bridge and Colony Capital who together created Digital Colony.

Commitments to the fund came from a mix of US and international investors including sovereign wealth funds, institutional fund managers, pension funds, endowments, insurance

companies, family offices and high net worth individuals – many of whom have previously invested with Digital Bridge or Colony Capital in other vehicles.

UBS eyes summer first close on fund III

UBS Asset Management is targeting a summer first close on its latest equity fund Archmore International Infrastructure Fund III.

The fund was launched at the end of 2018 with a \$1 billion target size. It is said to be a follow-on strategy from the previous Archmore funds focusing on small to mid-size equity deals for diversified, core infrastructure assets in OECD countries. Sectors targeted included transport, utilities, energy and social infrastructure.

Meanwhile, Archmore International Infrastructure Fund II, which closed at \$644 million in 2015, is said to be largely deployed.

Glennmont III reaches final close at €850m

Glennmont Partners has reached final close on its third investment vehicle, having raised €850 million (\$953 million). Glennmont Clean Energy Fund Europe III, which has a primary term of 10 years, comfortably exceeded its target of €600 million and its hard cap of €700 million.

Fund III generated demand globally from Japan, the US and European markets. Investors also include UK Local Authority Pension Plans such as Surrey Council, Southwark Council and East Riding Council, as well as the EIB.

The third fund will make investments in offshore wind projects across the EEA for the first time, but will adopt a similar investment strategy to its predecessors targeting solar PV, onshore wind, bioenergy and small-scale hydro. ■

More funds news at
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Briefings

M&A

Teasers out for Condor Ferries

Teasers have been issued for the sale of Condor Ferries to a number of potential bidders with sources close to the deal saying that the sale is expected to close this summer.

Rothschild is running the sale process for the passenger and freight ferry business connecting the UK with the Channel Islands and France.

Condor Ferries is currently held in Macquarie European Infrastructure Fund 2 (MEIF 2), having been sold in the summer of 2008 by RBS (now NatWest) to the fund manager for £250 million (\$476 million FX Aug 2008).

One bid for Electricity North West deal

Spanish electric utility Iberdrola is the only bidder to have submitted a proposal for the sale of the £2 billion (\$2.5 billion) distribution network operator Electricity North West.

CKI, China Southern State Grid and a consortium comprising Equitix, Kansai Electric Power and GLIL Infrastructure did not submit, despite being shortlisted earlier in the year.

The UK asset is currently owned 50:50 by First State Investments and JP Morgan Asset Management through their Infrastructure Investment Fund.

Bids in for Veolia US district energy portfolio

A sizable chunk of Veolia's North American district energy portfolio is up for sale with the company seeking in excess of \$1 billion.

Interest is expected from Enwave Energy (part of Brookfield Asset Management), Engie, Algonquin Power & Utilities and Epcor Utilities. Infrastructure funds are also eyeing the sale which includes around 13 district energy systems.

Semptra to auction off Latam assets

The bidding process for the acquisition of two assets that US-based Semptra is selling in Latin America could start in June with expectations that the sale concludes before year-end 2019.

The two assets up for grabs are an 83.6% stake in electricity supply company and hydropower developer Luz del Sur, located in Peru and a 100% of electricity distributor Chilquinta Energía in Chile.

Semptra will also sell its services companies Tecsur and Tecnored which provide electric construction and infrastructure services to these two companies, respectively.

Preferred bidder nears for AquaNet sale

A preferred bidder to acquire AquaNet Sydney, project company for Rosehill Recycled Water Scheme in western Sydney is expected this month (June).

The seller is Jemena, which is disposing of AquaNet in order to focus on its core businesses of gas and electricity. Jemena has been running the auction since late 2018.

Final bids were submitted early May (2019) with the seller looking to sign the SPA in June.

It is understood that local Australian super funds that bid to invest directly, and an international fund manager are the final bidders. They include Colonial First State, HRL Morrison & Co, Resonance Asset Management and Whitehelm Capital.

Enel sells 540MW renewables portfolio in Brazil

Enel's Brazilian subsidiary Enel Green Power Brazil Participações (EGP Brazil) has finalised the sale of two solar power plants and a wind farm to Chinese

company CGN Energy International Holdings (CGNIH).

The acquisition agreement was signed in January.

CGNEI acquired 100% of the three assets, with a total capacity of 540MW. The transaction totalled R2.9 billion (\$739 million) and is still subject to price adjustments.

The acquired assets comprise: 292MW Nova Olinda solar PV plant; 158MW Lapa solar PV plant; and 90MW Cristalândia wind farm.

Enel will continue to operate and maintain the three plants which have long-term PPAs in place.

Buyer for Carlsbad desal plant

Aberdeen Standard Investments is rumoured to have bought the Carlsbad Desalination Plant in California for over \$1 billion.

Three bidders submitted binding proposals in May for the desalination plant owned by Orion Water Partners, a JV of Stonepeak Infrastructure Partners and Brookfield Infrastructure Partners affiliate Poseidon. Competing bidders were CBRE with Korean investors and Acciona.

QIC is said to have submitted a non-indicative bid, but withdrew early due to the "transaction risk profile and other priorities". Non-indicative bids were submitted mid-February.

Orion Water Partners launched the sale of a 100% shareholding – with both Stonepeak and Brookfield exiting – at the start of the year with an information memorandum document issued to interested bidders.

The sales process was given some additional time as the owners were waiting on an application for an updated waste discharge-related permit from the San Diego Regional Water Quality Control Board. ■

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Briefings

CAPITAL MARKETS

Brazilian transmission raises \$96 million

Brazil's Equatorial Energia raised financing for the construction of three transmission lines through the issuance of infrastructure debentures in late May. The company raised R385 million (\$96 million) with the 20-year bonds, with a grace period of four years.

The transaction will finance three SPVs: Equatorial Transmissora 5; Equatorial Transmissora 7; and Equatorial Transmissora 8.

Cheniere closes credit facilities on Louisiana LNG

Cheniere Energy Partners closed \$1.5 billion in senior secured credit facilities with 29 banks and financial institutions on 29 May to build train 6 of the Sabine Pass Liquefaction (SPL) project in Cameron Parish, Louisiana.

MUFG acted as sole coordinating lead arranger on the five-year senior secured credit facilities which comprise a \$750 million delayed draw term loan and a \$750 million revolving credit facility.

Natixis, Société Générale, Bank of Nova Scotia and Wells Fargo were the issuing banks, while the joint lead arrangers comprised MUFG, SG Americas Securities, ABN AMRO Bank USA, BBVA, Bank of America, Bank of China, CIBC, China Merchants Bank, Citibank, CBA, Crédit Agricole, Credit Suisse, DBS Bank, Goldman Sachs, HSBC, ICBC, Intesa Sanpaolo, ING Capital, JP Morgan, Mizuho, Morgan Stanley, Morgan Stanley Senior Funding, NAB, Natixis, RBC, Santander, Standard Chartered Bank and SMBC.

Interest on the term loan will be at a variable rate per annum equal to Libor

plus 1.50% or the base rate plus 0.50% in each case with a 0.25% step up beginning in year three post-close.

For the revolving facility, loans will bear interest at a variable rate per annum equal to Libor plus a range of 1.25% through 2.125% (depending on the then-current rating of the partnership) or at the base rate plus a range of 0.25% through 1.125% (depending on the then-current rating of the partnership).

TRIG looks to finance Gode 1 stake via share issue

InfraRed's listed renewables vehicle TRIG has acquired a 25% stake in the Gode Wind 1 project from Global Infrastructure Partners, which has been struggling to sell a 50% stake in the asset since August 2018.

Contracts have been exchanged for the indirect equity interest in the 330MW offshore wind farm in the German North Sea, which benefits from a feed-in tariff until 2027.

A price for the stake has not yet been made public, but TRIG says it will finance the deal through sums raised in a recent share issue which brought in £302 million (\$381 million) and its £340 million revolving credit facility.

The holding company which will make the investment has bond financing in place at a fixed interest rate and fully amortising within the initial subsidy period.

TenneT issues green bond

European transmission system operator TenneT has launched and priced a €1.25 billion (\$1.39 billion) green bond.

The green bond is split into two tranches. Tranche 1 is worth €500 million and will have an 11-year tenor with a 0.85% coupon. Tranche 2 consists of €750 million over 20 years with a 1.5% coupon.

The bond received support from ABN AMRO Bank, Barclays, HSBC, NatWest Markets and SMBC Nikko.

Proceeds from the bond will be put towards investing in green projects in the Netherlands and Germany to connect large-scale offshore wind projects to the onshore electricity grid.

Greencoat UK Wind raises £375 million

Greencoat UK Wind raised £375 million (\$474 million) in a fundraising exercise in late May.

The LSE-listed vehicle announced earlier that month that it was potentially issuing up to 500 million shares in the next twelve months. It issued almost 282 million shares in this round, taking total ordinary shares to roughly 1.5 billion.

The shares were issued at a 5.2% share discount to share price on 1 May (£1.33), which still constituted a premium to NAV of 9.5%.

Application was made for the new shares to be admitted to the official list of the UK listing authority and to trading on the LSE's main market for listed securities with effect from on 5 June, after shareholders voted in favour of the resolutions proposed at the general meeting on 3 June.

RBC Capital Markets is acted as sponsor and bookrunner, while Kepler Partners is acted as placement agent for the programme.

AIIB prices debut global bond offering

Asian Infrastructure Investment Bank (AIIB) priced its debut global bond offering in early May, raising \$2.5 billion from around 90 investors globally, with the spread coming in lower than guidance after the bond was oversubscribed to \$4.4 billion.

The bonds priced on 9 May with a spread of 6bp above mid-swaps, and 9.65bp above US Treasury to 30 April 2024. The fixed interest coupon is 2.25%. The bonds have a five-year maturity, to 16 May 2024. The re-offer price was 99.718.

Bookrunners were Bank of China, Barclays, Crédit Agricole CIB, Goldman Sachs International (B&D) and TD Securities. ■

More capital markets news at [ijglobal.com](https://www.ijglobal.com)

Briefings

PEOPLE

Asset Managers

Arjun Infrastructure Partners has added **Julian Skinner** and **Nigel Hildyard** to its energy team. They join from **EP UK Investments (EPUKI)**, a UK energy company focusing on conventional and renewable power generation. Skinner and Hildyard both join Arjun as senior investment managers, having worked on various energy projects, including the Lynemouth Power Station. Skinner was formerly head of risk at EPUKI from 2017.

Mike Bryan is to exit China's state-owned **Ginkgo Tree Investment** in the summer. Bryan will leave Ginkgo Tree, where he leads the team as European head of infrastructure, in mid-July. Bryan joined Ginkgo Tree in the autumn of 2011 from a role within HM Treasury's infrastructure finance unit. He has also held senior roles at the Bank of Ireland infrastructure fund and led the NIBC infra team.

Atlas Arteria – the former Macquarie Atlas Roads (MQA) group – has been building out its Luxembourg-based team with two key hire: **Ignacio Ortega Baena**, European operations manager (investment VP); and **Quentin Sorbier**, investment associate. Ortega Baena is currently based in Sydney, Australia, where he was working with Cintra as a business development manager. Sorbier joins from KPMG in Luxembourg, where he was an assistant manager in deal advisory.

Banks

KEB Hana Bank has hired **Liam O'Keeffe** as head of project finance EMEA, reporting in to SunJin Park, head of EMEA investment banking, who also operates out of London. It is understood that the move was prompted by lack of fresh opportunity in the Korean

bank's more traditional markets and signals its intention to establish a considerable foothold in the PF market out of London. O'Keeffe worked at **Crédit Agricole** for 27 years, his last role having been managing director, head of special projects.

Haitong is closing down its structured finance business in London, shifting this function to its Lisbon offices. The structured finance function in London is currently run by **Robin Earle**, Haitong executive director and head of project finance for the UK. It is understood that Earle's exit from the bank is imminent. Prior to his executive director role at Haitong, Earle was a director at BES and previously worked at EBRD as a senior banker, having also worked at Deutsche Bank and Morgan Grenfell.

Ian Cogswell has started at **ICBC** in London with a remit to build an oil and gas project finance business at the Chinese bank. Cogswell was MD at Natixis from September 2006 until the end of 2018, rising to the role of heading up mid- and downstream lending. He will be working closely with Clive Carpenter, who has been head of project and infrastructure finance at the bank since October 2016.

Advisers

Ashurst has promoted its head of the Middle East region, partner **Joss Dare**, to a new role of global head of projects based in London. David Charlier will take over the role of Middle East head. Dare's work is focused on the infrastructure sector and he was previously global head of transport at Ashurst. He had been based in Dubai since 2007 and has worked for Ashurst since 1999.

Pinsent Masons has relocated projects partner **Catherine Workman** to its Dubai office after her 15 years representing the firm in London. Workman's move will support Pinsent Masons' activity in Saudi

Arabia. Workman has been at Pinsent Masons since November 2003.

Terrence O'Donnell has joined **Shearman & Sterling's** capital markets practice as counsel. O'Donnell will be based in the Hong Kong office before relocating to Singapore later in 2019. He specialises in equity and debt capital markets, and M&A as well as private equity deals in China and South East Asia.



Sponsors

K2 Management has made three senior appointments in its UK team. **Gary Bills** will join the company as UK country director in September 2019 from rival technical consultancy Mott MacDonald, where he was programme director for renewable energy. **Steve Ikin** joins K2 Management in July as global director of asset management. He was previously director of operations and asset management at Community Windpower. **Will Sheard** has been promoted to global manager for due diligence – a move which will see him lead the team he previously worked for.



Hiroki Matsuo has been promoted to president and chief executive officer of Japanese renewables developer **Pacifico Energy**. He was previously senior vice president in charge of development of solar and offshore wind. Matsuo joined Pacifico Energy in April 2013 as head of project development and business promotion.

Terrance McKibbin will on 30 June take on the role of president and CEO of **Bird Construction**, replacing **Ian Boyd** who is stepping down. Boyd will stay with Bird and take on the role of executive vice-president for major projects, having been made president and CEO in 2015. ■



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Briefings

POLICY & REGULATION

Political uncertainty jeopardise UK power deal

The UK Labour Party's announcement that it plans to nationalise gas and electricity networks has spooked the horses on the £2 billion (\$2.53 billion) Electricity North West sale.

Opposition leader Jeremy Corbyn recently published plans to re-nationalise most gas and electricity networks in the UK and part-nationalise electricity interconnectors "immediately", should the Labour Party win the next election (currently scheduled for 2022).

Further, Brexit discussions are reaching boiling point and Ofgem has clamped down on how much shareholders can get in returns of electricity transmission and gas distribution companies.

Electricity North West, one of the UK's 14 distribution network operators, is the first deal to be impacted by political uncertainty.

The company is owned 50:50 by First State Investments and JP Morgan Asset Management. It maintains and upgrades 13,000km of overhead power lines and 44,000km of underground power cables across North West England.

Mexico launches six-year plan

President Andres Manuel Lopez Obrador has launched the national plan for development 2019-24.

Among directives for political and social change, it also emphasises investing in the infrastructure sector with the most important project being the 1,525km Maya Train – which requires between Ps120 billion (\$6.3 billion) and Ps150

billion financed via public, private and social sources.

Another important infrastructure priority is the trade corridor Tehuantepec Isthmus, a mega-project that will connect the Atlantic Ocean to the Pacific.

The six-year plan also highlights that the federal government will respect contracts signed previous to this government. However this does exclude contracts where the government can prove the involvement of corruption.

France's Supreme Court clears privatisations

The Conseil Constitutionnel has validated several propositions of the PACTE law, which includes the privatisation of Aéroports de Paris (ADP) and energy company Engie.

The court validated provisions of the law that had been challenged by members of the French Assembly on the grounds they were unconstitutional. In particular, the court dismissed claims that, with reference to the 1946 French Constitution, the assets constitute a de facto monopoly and a national public service.

Privatisation of such assets are prohibited by that constitution.

The PACTE law (framework for the growth and transformation of enterprise) is a set of initiatives brought by France's Ministry of the Economy and Finances aimed at stimulating numerous aspects of business.

The privatisation of ADP and Engie forms part of these measures, with revenues expected to finance innovation funds.

New Zealand announces infra pipeline, commission

Infrastructure minister Shane Jones has announced a prototype infrastructure pipeline for the next five years, developed by the infrastructure transaction unit within the Treasury, to be handled by a new commission.

The pipeline includes 174 projects, with an estimated NZ\$6.1 billion (\$4.02

billion) value, identified as having full or near full funding certainty.

The New Zealand infrastructure commission – Te Waihanga – will focus on developing the pipeline as part of a 30-year strategy, and is due to be operating by the end of 2019.

Private sector projects will be added to the pipeline over time, according to the Treasury, but not until after Te Waihanga is functioning.

The aim is for these agencies to be represented in the pipeline and all central government agencies and most local government agencies, by late 2019. Then over time private sector projects would be added.

Chile launches road investment plan

President Sebastián Piñera has launched Chile's road infrastructure investment plan, which will require investments of more than \$7 billion in tenders and re-auctioning processes.

The plan includes 17,000km of roads and highways, and Piñera also plans to open discussions with highway concessionaires to reduce toll rebates. The projects comprise the expansion of existent roads and introduction of electronic tolling, while also upgrading rural roads.

The plan also includes improvement of 9,681km of rural roads and 3,839km of roads in indigenous communities, paving 1,613km up to 2022, with a total investment of \$1.12 billion.

Piñera stressed that the plan will expand and also renew the country's current road structure in "each and every one of the regions of the country".

"We have had a deficit in infrastructure investment that we want to recover." ■

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Who's afraid of the CLO?

Not all financial instruments with three-letter acronyms are scary, and CLOs for infrastructure debt are not only making a comeback but being promoted as a solution to climate change. By Jon Whiteaker.

It is easy to be damned by association or resemblance. The Blusher mushroom is delicious if cooked properly but could be mistaken for the appropriately named Death Cap from the same genus.

The cautious may similarly want to avoid collateralised debt obligations (CDOs) given the dangerous reputation of their close relatives – but that would be an overreaction.

Banks have considered CLOs as a way of distributing project finance debt for at least 20 years. In the mid-2000s the PF market was booming, and banks' balance sheets' burgeoning with long-term loans they were keen to recycle.

In many ways CLOs made a lot sense for project finance banks. It was additional way to sell down debt in the capital markets, and some innovative structuring created a variety of risk/return options for investors.

Only a few of these deals were completed, however, before the global financial crisis of 2008-2009 put this nascent market on hold.

Banks were suddenly facing an existential crisis and relatively untested products with three-letter acronyms that wrapped and resold debt were very much out of fashion.

After a hiatus, market participants are once again looking at the viability of CLOs for long-term energy and infrastructure debt.

Asia is at the forefront of this resurgence, with Clifford Capital completing the region's first PF CLO in 2018 and now planning a series of follow-on transactions.

Meanwhile, a G20 initiative is promoting the product as a way to accelerate the global energy transition

and waiting for banks to fully to commit to the scheme.

Fear factor

Mention CLOs to non-bankers working in infrastructure finance, and you are likely to be met by raised eyebrows.

If most people know anything about the causes of the global financial crisis, it is that a systemic failure of sub-prime mortgage securities was the catalyst.

Those who were paying attention know that a specific cause was B notes of these securities that had been aggregated into collateralised debt obligations (CDOs).

Despite ratings agencies downplaying the contagion risk of these AAA-rated CDOs going bad, when they did, they brought the rest of the financial system down with them.

CLOs sound a lot like CDOs and tend to elicit wariness from those unfamiliar with the financial product, particularly in a market where there have been very few examples of them.

But the CLO market provides around 70% of funding for non-investment grade borrowers in the US, according to research from the G20

Sustainable Finance Study Group, which is promoting the creation of a new 'sustainable CLO' market.

At a time when banks are being encouraged to get long-term loans off their balance sheet by regulators and the infrastructure sector is still an overwhelming bank-funded market, CLOs could become a solution.

Chris McGarry is a partner at White & Case, which is advising the G20 study group and co-authored a white paper on sustainable CLOs published late last year. He argues that those commercial mortgage-backed securities (CMBS) from the financial crisis were very different from typical broadly syndicated loan (BSL) CLOs that have proven a robust and reliable product.

While the CMBS deals were backed by rental streams, BSL CLOs are structured with SPVs buying financial assets that pay interest in principal. The former were brought down by unsustainable interest rate swaps after global interest rates fell from 5% to virtually 0%.

"The assets that broadly syndicated loan CLOs aggregate are corporate loans", McGarry says. "The underlying credit quality of these borrowers is B or BB, with over 10x leverage on a portfolio, which would make you think a share of those CLOs would default during the financial crisis. And yet 0% defaulted."

"The main job of global financial regulation is to create a system that supports the 'goldilocks' amount of leverage in the system. And for CLOs, the ratings agencies assumptions were correct, all market participants were in it for the long-run, and no one was doing anything crazy or too structured. That product sailed through the crisis."



Chris McGarry, White & Case

Asia taking a lead

Last year Singapore-based Clifford Capital issued Asia's first PF CLO through a newly-created subsidiary – Bayfront Infrastructure Capital.

It had issued \$458 million split between three senior note classes, with pricing ranging from 145bp over 6-month US Libor on the Class A notes and 315bp for Class C notes. Clifford Capital retained a \$45.8 million subordinated tranche.

The issuance securitised the cash flows from 37 senior floating rate loans related to 30 projects in Asia. These projects ranged from conventional power in the Middle East to LNG liquefaction in Australia. All but four of the projects were in operation and 30% of the loan portfolio was covered by export credit agencies.

Five banks provided the loans – Clifford Capital itself, DBS, HSBC, MUFG, SMBC and Standard Chartered.

As a first-of-a-kind transaction, it took a long time to source the loans required for the Bayfront deal. The market for PF loans is far less liquid than for corporate debt and just because a loan might qualify doesn't mean its economic characteristics fit with the others you have pooled.

Nicholas Tan, senior director at Clifford Capital, says: "The first transaction was a simultaneous acquisition of loans and issuance of notes, hence significant coordination was required with the contributing banks."

Explaining the asset class and deal structure to potential investors was also time-consuming. One fundamental motivation for creating a PF CLO market is its ability to bring new types of investors into the infrastructure market.

It is hoped that once the product is more widely deployed investors will simply need an acceptable credit rating to be encouraged to buy these types of notes. Investors in the first Bayfront deal, however, needed to be convinced that this was not a one-off.

Clifford Capital is setting up a warehousing facility to reduce uncertainty for contributing banks, and intends to



Nicholas Tan, Clifford Capital

make an issuance through the Bayfront brand every 12-15 months of roughly \$500 million in loans it has stockpiled.

Warehousing the loans, and taking on their risk in between issuances, will allow Clifford Capital to group loans together by asset type and risk profile, creating tailored notes to specific investors.

Tan says: "Unlike typical US CLOs, where there is active trading of the portfolio during the reinvestment period, we are mostly focused on a static structure. So we would only replace if there is a prepayment or some form of default."

Clifford Capital takes a collateral manager fee but most of its income will be generated by a subordinated debt or equity tranche in each issue. It is open to some level of syndication but will retain a piece of each transaction to give investors comfort and satisfy risk retention requirements in various markets.

Tan claims around 25 institutions, both commercial banks and DFIs, are in discussion to contribute loans, and the next issuance is planned for the second half of 2020.

This is perhaps a little later than originally planned but Clifford Capital received the boost of a ratings upgrade in April from Moody's despite one of the 37 loans being in technical default. This was largely thanks to an upgrade on Australia Pacific LNG project debt, which makes up 4.6% of the CLO portfolio.

The first deal featured loans to two coal-fired plants and other thermal

generation assets but Tan acknowledges that environmental issues are of increasing importance to most investors. He says Clifford Capital is working towards being able to market and issue an entirely green CLO in the future.

"One very clear exclusion going forward is no coal assets", Tan says.

"Our facility is by nature retrospective because we are acquiring loans from banks that were originated three or four years ago. But we see the wave of renewables moving quickly, we are structuring our own policies to be ready for that in the future."

The vehicle is limited to dollar loans for now, which could prove an obstacle to further expansion in the future.

"We haven't cracked the local currency dilemma, yet", Tan admits. "Our funding base is expected to be in dollars, and likewise for our distribution base. There are hedging solutions out there but they are not perfect because they do not mitigate prepayment or default risk."

Though much of Asia project finance has been dollar denominated historically, over the last decade this has changed due to increasing liquid and sophisticated local banks.

But banks are working hard on perfecting effective hedging solutions, not least in Taiwan where the much coveted offshore wind projects will be receive revenues in local denomination.

Historical deals

While the success of Bayfront suggests a burgeoning CLO market in Asia, the situation is very different in other regions.

PF bankers in New York will point to an already active bond market in both North and Latin America meaning fewer deals are funded by long-term loans in the first instance and there are already other channels for distribution in the capital markets. Few will tell you PF CLOs are something their institutions are really looking at.

The very first PF CLOs were in the US market, however. In 1998 Credit Suisse First Boston issued about \$617 million in

debt and equity securities collateralised by a portfolio of roughly 40 loans mostly attached to US projects. It completed a follow-up issuance in 2000.

After these initial cash CLOs, there were a number of synthetic CLOs. These were based on the sale of credit protection on referenced loans using credit default swaps, rather than directly acquiring the underlying loans.

The first of these in 2004 was based on a portfolio of 25 UK PFI loans originated by Depfa Bank. The £391.7 million Essential Public Infrastructure Capital Plc (EPIC) involved KfW selling credit protection to the issuer.

The next innovation in 2006 was the first collateralised bond obligation from Dexia which featured notes wrapped by monoline insurance companies rated AAA at the time. The structure of WISE 2006-1 was called “double default” because investors were exposed to losses only if both the underlying project bond issuers and the monolines defaulted. The £63.75 million issuance had a reference portfolio of 31 infrastructure bonds.

Despite the subsequent collapse of the monolines, the issuance is still trading today.

Emanuele Tamburrano, director EMEA project finance ratings at Standard & Poor's, says WISE 2006-1 demonstrates the durability of the CLO structure for infrastructure finance.

“There were lots of downgrades for some of the underlying assets [of WISE 2006-1] during the crisis, as you would expect, but there has not been a default in the 13 years since issuance.”

Tamburrano adds: “Default rates for CLOs in Europe and the US over the last 20 years is less than 1% all-in, and the default rates for project finance as an asset class are very low, so I would expect project finance CLOs to perform in-line with corporate CLOs, if not better.”

Sustainable CLOs

The G20's initiative to establish a sustainable CLO market is based on analysis that to meet Paris Agreement targets, an investment of \$100 trillion in



Emanuele Tamburrano, S&P

sustainable infrastructure is required over the next 15 years.

According to McGarry of White & Case: “SCLOs can be the mechanism to fund the energy transition.”

Some may argue that there is already no lack of capital for new projects, just a lack of bankable problems, which a sustainable CLO market would do little to address. But making infrastructure assets available to a wider pool of investors is an understandable aim in itself.

Infrastructure finance is still the preserve of a small universe of investors compared to other asset classes. Despite increasing participation from institutional investors, either investing directly or through funds, construction risk remains unappealing to many. Banks still provide the vast majority of greenfield financing.

With this situation not changing fast, if at all, focus instead is on opening up the secondary market. Corporate ‘green bonds’ are increasingly popular, though ill-defined and barely regulated. McGarry argues that a new secondary debt market is needed to really “move the needle”.

The term ‘sustainable’ is just as slippery as ‘green’, and the G20 Sustainable Finance Study Group admits that standards will be needed to establish clear criteria for assets to be included in sustainable CLOs.

In the meantime, it offers this working definition: “Sustainable loans, sustainable debt and sustainable bonds as specific financial products or debt linked to assets

or investments that target environmental and social sustainability; however, the more general consideration of financial sustainability is also contemplated.”

It is clear that initial sustainable CLOs will be targeted at what McGarry describes as “low hanging fruit” – debt for solar and wind farms in developed markets.

“We have identified \$200 billion in clean energy loans sitting with 30 banks”, he says. “That is the low-hanging fruit. Some of the banks on that list, including the big Japanese banks, are amongst the biggest investors in normal CLOs and should understand the story. We are also in conversation with a few of the big European banks.”

McGarry expects to achieve a 20% leverage for a sustainable CLO due to the investment, or similar, rating of the underlying borrower. S&P's Tamburrano says: “In a project finance CLO, the assets will tend to be better quality but will pay a lower coupon.”

For a CLO with renewable energy projects as the underlying assets, the underlying risk should be even less. McGarry says: “There shouldn't be any haircut for the best kind of sustainable CLOs, backed by solar and wind because it is the sun and the wind which is going to repay the bondholders. If renewables are economic today it is only getting better.”

The G20 study group has been negotiating with banks and governments to support the initiative. It has been lobbying the central banks to provide additional incentives to kick-start the market.

“If we can sign up a core block of the G20 central banks to take these loans as REPO collateral, that one stroke will change the attitudes of banks and governments to this”, McGarry says. “The cavalry will be on call. The central banks will provide the cheapest money on the planet to accelerate the pace of doing it.”

Though this would be a significant incentive, step one is still going to be getting at least one major bank to committing its balance sheet of renewable energy loans to a pilot sustainable CLO.

Convincing lenders

"Infra bankers don't want to sell their loans because they like the yield," McGarry says. "They have their green initiatives and targets but there is an institutional disconnect."

Origination teams are always likely to show some level of resistance to losing revenue generating assets, even if the yield is marginal. Banking after all is fiercely competitive and the opportunities to make new loans are not abundant.

While Basel III requirements should be encouraging banks to have less long-term debt on their balance sheets, institutions are at different stages of implementation.

Many major US banks and others with a global reach such as HSBC do very little long-term lending now, some European banks and particularly the major Japanese banks are still pretty active.

MUFG bankers in London will tell you that they typically lend long at financial close but are already efficient at syndicating that debt quickly. Their need for a new

secondary debt market is not that great.

It is European banks that have heavily supported renewables development that are probably the prime target of the G20 initiative. The study group estimate that BNP Paribas has around \$8.6 billion in green energy loans on its books and Santander roughly \$20 billion.

"The direction of travel in Europe is that banks are going to have to risk-weight their balance sheet based on sustainability, so CEOs of these banks should be encouraging their infrastructure teams to participate in a SCLO market because that will be positive from a capital perspective."

Another potential target could be development banks, given their mandates involve supporting hard to finance projects at an early stage, and bringing investor confidence to emerging markets

"We have received enquiries from multilaterals about these types of structures but there is not going to be a rush of activity", S&P's Tamburrano says. "Instead we may see one or two in a year

until, little by little, institutions recognise the benefits of recycling capital and being involved in this type of long-term project."

DFI involvement raises questions for the borrower however, given the confidence all counterparties on emerging market transactions gain from having institutions with government-level relationships involved in projects. If the government borrowers from the IFC, it is much less likely to miss payments to a project it is involved in.

There are also issues around consents and waivers if there are material changes to any underlying assets. McGarry argues that these risks can be mitigated in the structure of any CLO deal, with potential recall options if a loan needs to go back to a bank.

McGarry says the only real obstacle is getting a major bank to back a proof of concept deal of around \$1 billion in size. "We are close but until we get the first mega deal done, we don't have a market." ■

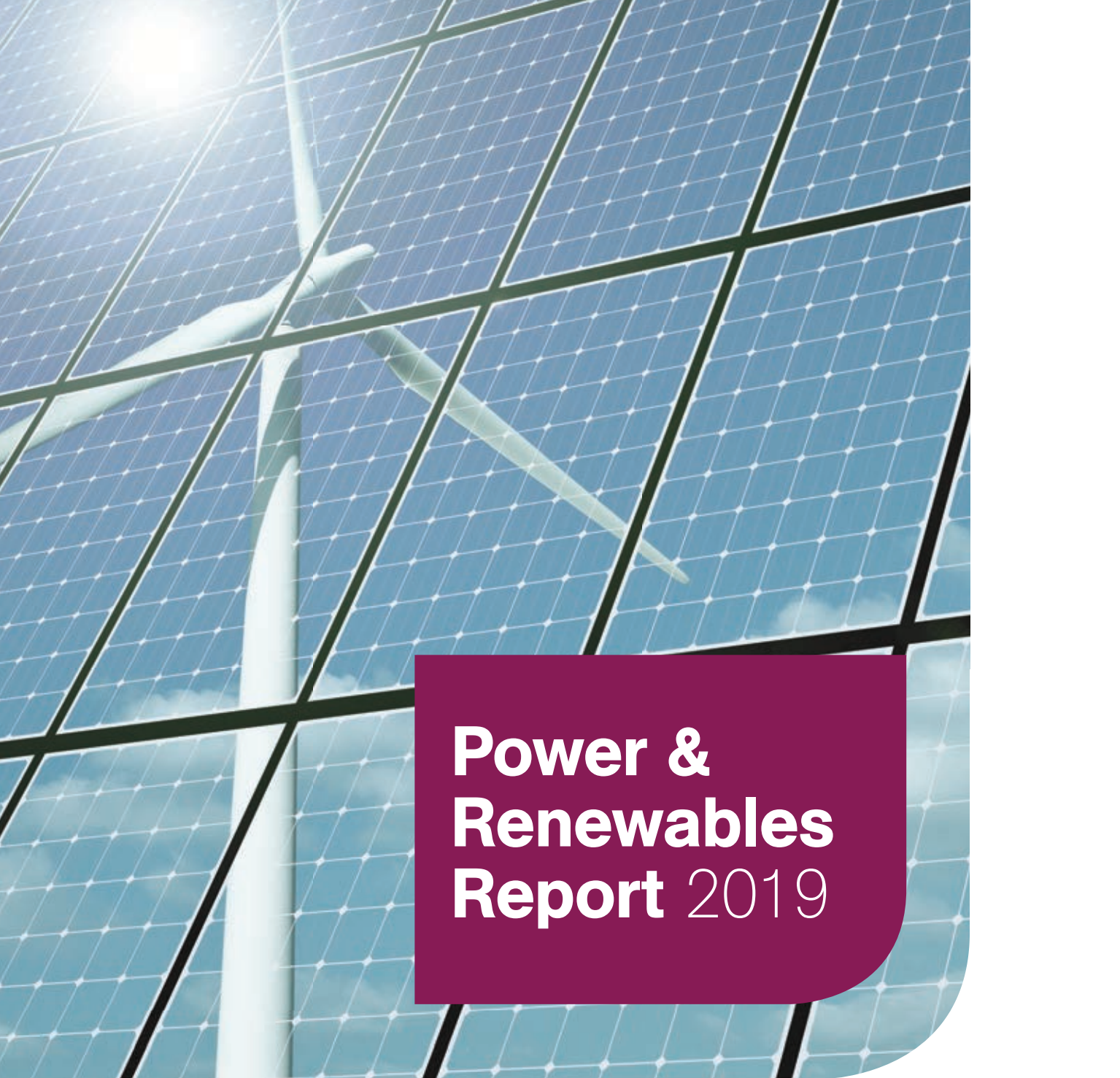
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Monster hunting

Major energy storage projects in Asia remain elusive but more investors and developers are hunting for financeable solutions.

By David Doré

“The energy storage market is kind of like the Loch Ness Monster. It’s rarely seen. It’s said to be huge. And many think it’s not real.” So says Chris Wedding, managing director of IronOak Energy Capital, an investment bank focused on renewable energy and sustainable technology.

Despite the doubters, Mitsubishi may have successfully ensnared a monster with its 1GW Advanced Clean Energy Storage (ACES) project in Utah, in the US. Promoted as the world’s largest ever energy storage project, ACES entails using Magnum Development’s salt caverns. It aims to use a mix of compressed air, flow machines, hydrogen and solid oxide fuel cells to store energy from solar power plants and wind farms. ACES could challenge the legend of lithium-ion being the king of energy storage technologies.

“This is an epic project for us,” said Mitsubishi vice-president Thomas Cornell when his company signed an MoU with Magnum Development in May (2019). The project, as you might imagine at this stage, is long on aspiration and short on details, such as the suppliers of the flow machines and solid oxide fuel cells.

Asia Pacific’s financiers have yet to snag their epic energy storage project. Market participants caution that the pool of capital financing energy storage in Asia Pacific is shallow. However, they insist the market is slowly getting deeper as developers, financiers and advisers wrestle with the risks and explore pathways to cultivate the participation of private sector financing.

Today project developers in Asia Pacific favour a hybrid approach: energy storage attached to a renewable energy project. In general, project finance debt has supported the development of the solar or wind farm component, while equity provided by infrastructure funds has funded the riskier energy storage element, according to RES Group head of energy storage Marcus Keller.

Complexity and dynamism

Financing of energy storage projects is much like any other energy project. Financiers seek reliable cash flows through long-term contracts, dependable counterparties with an established record and risk mitigation tools, such as an original equipment manufacturer performance guarantee. IronOak’s Wedding, a US-based clean energy investment banker and professor, regularly asks storage technology companies: “How big is your balance sheet?”

However, energy storage projects present lenders and investors with a more complex and dynamic challenge than a traditional gas-fired power plant or even a solar or wind project, insists Adeline Pang, Melbourne-based partner at White & Case. She advised French developer Neoen on the *IJGlobal* 2018 Asia Pacific energy storage transaction of the year: the \$A343 million (\$244 million) Bulgana Green Power Hub.

Bulgana is a 194MW wind farm with 20MW / 34MWh battery storage unit using Tesla lithium-ion powerpacks in Victoria, Australia. KfW



Marcus Keller, RES Group



Adeline Pang, White & Case

IPEX-Bank, Korea Development Bank and Société Générale provided A\$108 million in debt with a tenor in excess of 20 years, exceeding the length of the power purchase agreement (PPA) with the state.

As opposed to a power plant’s primary objective to provide power into the grid, an energy storage project has many use cases and potential revenue value streams, notes Tristan Knowles, a private sector climate finance specialist at the Asian Development Bank (ADB). “Energy storage is interesting because it can act as both a source of supply and load on a grid, providing various grid support services,” the Bangkok-based banker says. “The regulatory rules and revenue streams from these services, however, remain unclear in many markets.”

Market actors stress the importance of identifying how the project developer intends to use the energy storage. Another consideration is whether it will be co-optimising and trading across wholesale and ancillary service revenues, providing network support at the transmission level or offering a novel hedging mechanism for retailers and large end users. With 15 years of experience in energy storage, Keller says he and his team in Sydney routinely return to the question “What problem is the energy storage trying to solve?” as their pipeline of some 200MW of energy storage assets in the Asia Pacific region move closer towards financial close.

Risks: visible, large and real

Industry participants agree about the risks financiers should prioritise with energy storage. The preeminent risks involve revenue, operations and maintenance, and policy and regulatory. Technology risk could easily be a fourth risk. Yet, industry insiders arguably embed it in each of the three main risks, with an emphasis on O&M. Energy storage's complexity and dynamism drives each risk.

Revenue risk

Sponsors may invest in energy storage to solve multiple problems at different levels of electricity's value chain. Consequently, modelling a project's economics potentially incorporating revenue generating and cost-saving measures has a dynamic risk profile, remarks Daniel Mallo, Société Générale's managing director of energy, infrastructure, and metal and mining for Asia Pacific.

"Optimising power prices on a merchant basis and supplying electricity to grid at a peak price has inherently higher volatility," notes Mallo. "Contrast that with grid stabilisation and we're usually talking about capacity payments by the offtaker. In that case, we expect a much more stable cash flow."

Neoen's 100MW Hornsdale Power Reserve illustrates the multiple uses of energy storage. The sponsor primarily uses it to stabilise the grid in South Australia. Moving up the risk profile, the power reserve also stores electricity from the nearby Hornsdale Wind Farm when

demand is low and trades on the spot market when demand is high.

Operations and maintenance risk

Financiers, of course, factor in the second risk of energy storage projects – operations and maintenance – in all their energy projects. The difference for energy storage is in its intensity and the sophistication required to optimise a particular solution for multiple uses, such as energy arbitrage and frequency regulation.

ADB's Knowles underscores that renewable energy projects with PPAs of 20-25 years would exceed the expected life of a lithium-ion battery. "Maintenance and replacement strategies, therefore, will be important where there is a contractual obligation to provide services over that entire period," he contends.

Mallo of Société Générale highlights that the long-term performance record of the different technologies is sparse. He notes that the development of a standard service agreement is hard to imagine for an energy storage project. "The degradation – and therefore how much to service the storage system – is dependent on how it's used," the Hong Kong-based banker remarks. In the extreme, one would imagine a pure energy arbitrage strategy likely accelerating degradation, as it is constantly optimizing the load-generator balance. Mallo adds, "The financial modelling is anything but straightforward."

A related risk is the software platform optimising the ebb and flow of electrons. "While financiers have established due diligence procedures for energy projects including renewables," says White & Case's Pang, "the challenge for the future is the ability for due diligence and risk assessment models to unlock the additional value from trading activity of hybrid or energy storage facilities." She notes, "This may be assisted by the advent of products developed by software providers or technology companies in the energy sector."

Soltage CFO Sripradha Ilango wrote in an open letter to investors:

"Another major piece of the valuing assets puzzle is software. Software can be either a saving grace or a silent killer in a financier's decision to invest in a solar-plus-storage asset. Not only does much of the financial risk of the assets come from the software, but much of it can also be solved with it."

Policy and regulatory risk

Industry participants also emphasise the policy and regulatory risks involved in the development of financing an energy storage market. Alex Wong, Singapore-based partner at Hogan Lovells, expects funding to gain the most traction in OECD markets and Singapore.

The energy partner considers offtaker risk a key element in developing electricity markets. In developed markets, he anticipates heightened political risk as executives face the dilemma between climate change objectives and higher energy costs.

Sovereign financing to date has been at the vanguard of energy storage's progress – much like it was 10 to 15 years ago with renewables. Yongping Zhai, head of ADB's energy sector group, notes ADB's \$280 million loan to Pakistan's National Transmission & Despatch (NTDC) – dubbed Tranche 3 – illustrates how sovereigns may support the market during the next three to five years. Tranche 3 will finance Pakistan's first large-scale grid-connected battery energy storage system (BESS) pilot project, as part of a much larger effort to improve power



Daniel Mallo, Societe Generale



Alex Wong, Hogan Lovells



Dr Yongping Zhai, ADB

transmission in Punjab. The BESS will provide subsecond frequency regulation.

Herbert Smith Freehills' energy and infrastructure partner, Dan Zador cautions that batteries are still marginal. Sponsors will need government support until energy storage's levelized cost of energy (LCOE) falls more, says the adviser to Infigen on its 25MW / 52MWh Lake Bonney BESS. The South Australia Government and Australian Renewable Energy Agency financed with grants more than a fourth of the nearly A\$40 million (\$28 million) Lake Bonney BESS.

The time when energy storage solutions compete without government subsidies may be fast approaching. Energy research houses report the LCOE of lithium-ion batteries with four-hour storage has dropped 70-75% during the past seven years. In comparison, solar PV has declined 75-85%, while onshore and offshore wind has fallen 40-50% and 50-60%, respectively.

Many of the regulations about energy storage will differ by jurisdiction. Interconnection and siting location are ubiquitous risks, however, as project sponsors pitch energy storage solutions to inexperienced utilities. When on-peak charging is a use case of the energy storage solution the costs of network upgrades will be a factor. Energy storage regulating frequency, for example, may have upfront capital expenditures, but that ancillary service may deliver more value over the long-term.

"A number of energy projects under development are being delayed due to interconnection risks", says Peter Davis, a partner at Herbert Smith Freehills in Sydney.

How to ensnare the monster

Further liberalisation of the electricity market, innovation in the insurance market and knowledge transfer in Asia Pacific are three pathways to support private sector financing of energy storage – whether standalone or hybrid.

Robust electricity futures and spot markets need to take root, if private sector financing of energy storage is to have any chance of success. Volumes at Engie's power desk in Asia grew about a third year-on-year, reaching about 12TWh in 2018, according to Matthias Soreau, the firm's head of power and gas trading in Asia Pacific.

Singapore's Open Electricity Market (OEM) began rolling out last year (2018). Singaporeans can choose to switch from national provider SP Group to one of 13 licensed residential retailers. "Switch rates are higher than the single-digit first-year switch rates seen in other countries such as Japan, UK, Australia and New Zealand," reports the Energy Market Authority in a February 2019 update as more zones in the island nation open up.

A wholesale spot market is also a prerequisite to the long-term development of the financing of the energy storage market, adds Mallo. The premium between futures and spot prices indicates the risk traders perceive in the spot market. The movement between the prices could trigger energy arbitrage to kick in at energy storage projects.

Market participants are also eyeing the Philippines, spread across more than 7,600 islands. The country's archipelagic geography means that a distributed network bolstered by energy storage is more likely to develop, according to ADB's Zhai. Moreover, the Wholesale Electricity Spot Market (WESM), formed in 2006, was transferred last September (2018) from state-owned Philippine Electricity Market Corporation to the



Peter Davis, Herbert Smith Freehills

Independent Electricity Market Operator of the Philippines (IEMOP), a new independent body.

In addition to market liberalisation, the insurance industry needs to design, test and market structured financial products for energy storage projects. Keller emphasises that insurers should take the time to understand the "bath-tub curve" for energy storage and consider revenue swaps to mitigate what many industry actors observe to be the crucial obstacle.

Nephila Advisors and RESurety have analysed curtailment risk at Enel Green Power's 450MW High Lonesome Wind Farm in Texas. Allianz then designed proxy revenue swaps accounting for price and volume risks. Insurers can adapt similar modelling for the energy storage industry to boost the confidence of project finance bankers in the region.

A third step to develop financing is knowledge transfer. There is a dearth of energy storage projects financed with non-recourse or limited debt in Asia Pacific. Most experienced sponsors, bankers and advisers are in the US, while Australia has its share. Société Générale's Mallo calls on the first movers to share lessons learned with market participants in the region. "The lack of knowledge and experience is a serious impediment to the market's development," he says, before cautioning: "The best chance of idea exchange, though, is if the first movers are looking to expand beyond the US and Australia. For that, I'm not so sure." ■

Defining the transition

An increasing number of energy transition funds are being launched and their investment targets are varied and numerous. By Viola Caon.

While most managers have been considering green investments for the past decade, the Paris agreement to keep global warming below two degrees through this century has spurred technological innovation, which in turn has significantly broadened the universe of assets for investors.

10 years ago, the focus was renewable energy investment, particularly in wind and solar. Today, it ranges from older but more prevalent technologies such as hydropower and biomass, to newer technologies like smart metering. Now many are looking to the future by assessing opportunities in energy storage and, in a few cases, electric vehicle charging.

Electric vehicle charging assets are just in their infancy, while a market for energy storage assets has taken longer than expected to materialise.

Despite returns being compressed in the energy sector globally, energy transition remains a key focus for fund managers and investors alike.

Energy focus

Switzerland-based SUSI Partners has been investing in renewables and energy efficiency for the past 10 years and was the first manager in 2016 to launch a vehicle exclusively dedicated to energy storage.

The firm launched pre-marketing for the SUSI Global Energy Transition Fund in April this year (2019) targeting €1 billion (\$1.1 billion) in capital commitments.

To CIO Marco van Daele, this strategy combines all of the expertise that the firm has been building over the past decade. “To us today, energy transition means decarbonisation in electricity production, decentralisation and increased flexibility of the power

sector, efficiency gains with existing infrastructure and electrification of the transport and heating sectors.”

The firm started off by addressing the decarbonisation and decentralisation of the power sector by going into renewables, launching two renewable energy funds.



Marco Van Daele, SUSI Partners

Over time, van Daele says, energy efficiency emerged as one of the biggest levers to make decarbonisation happen. The firm is raising its second energy efficiency fund investing in energy efficiency retrofits of existing infrastructure, using technologies such as LED lighting, replacing heating and cooling systems, and onsite, biomass-powered CHP plants.

While van Daele sees “the boundaries within those sectors and technology blurring”, he warns against using energy transition just as a marketing label.

“If it is not energy-related, then it should not be called energy transition,” he says. However, while this might sound pretty clear-cut, SUSI’s own energy definition is fairly broad.

“I would recommend looking beyond what is written on the tin and look into the tin itself. It is one thing if the offering is coming from someone who has invested in everything from coal power stations to toll roads and regulated utilities and has only started to turn to energy transition recently – or if an energy transition fund is raised by a manager that has a track record of projects contributing to CO₂ savings across the energy sector, including renewables, energy efficiency, energy storage and solutions,” he argues.

Van Daele acknowledges that returns might be compressed in certain areas. However he says they are never determined by the sector but by the risk taken.

“Our returns are infra-like. 10 years ago, for instance, there was a higher than needed perception of risk around investing in wind farms and therefore returns were pretty high. Energy storage is now going through a learning phase so the asset is priced differently compared to two years ago. We are seeing a return compression in this space, but competition is not very high at the moment and we remain keen. In addition, we are exploring sectors such as EV charging infrastructure, where we see significant demand for capital in the near future which is not currently met by adequate expertise and capital,” he concludes.

While it might be a space that appeals to SUSI, energy storage is still generally seen as a maturing sector by others.

German renewables manager Aquila Capital recently relaunched its Energy Transition Infrastructure Fund (ETIF) to focus more on energy transition opportunities linked to the water sector rather than to battery storage.



Syverud Tor, Aquila Capital

“After sounding the market, we decided to focus less on battery storage opportunities, as these are fewer and far behind, and concentrate more on assets underpinned by water facilities. We expect energy storage to generate more adequate opportunities further down the line,” says Tor Syverud, head of hydro investment management at Aquila Capital and co-head of ETIF

Delivering power even when the sun is not shining and the wind is not blowing is one of the drivers that pushed Aquila Capital to expand its energy transition universe and to focus more on hydro. However, Aquila Capital is mostly limiting its energy transition scope to the electricity value chain.

“We will be able to go as deep in the value chain as to get to investing into EV charging stations, but for now we are sticking to electricity. Something that we have been able to add to our energy transition proposition is district heating where we would convert non-fossil fuel energy into heat, especially in the Nordics. We are also considering power-to-gas such as hydrogen”, Syverud adds.

In warmer parts of Europe, Aquila Capital has been instead looking at district cooling, where cold water is stored and the redistributed throughout a pipe system.

Ancala Partners’ Lee Mellor agrees that opportunities in battery storage are not ripe yet: “The fabled battery boom still remains just out of reach but there is definitely a growing appreciation of its need and the size of the opportunity.”

Mellor sees “considerable opportunities” for energy transition investments across sectors and geographies and says that greater environmental and social awareness amongst corporates is creating clean energy opportunities.

“Our portfolio company HS Orka, Iceland’s leading private electricity generator, contracts directly with corporates to supply renewable energy. We are also seeing significant opportunities in local utility networks and renewable generation through our portfolio companies Leep Utilities and Biogen”, he says.

As the majority of these opportunities are more merchant in nature than traditional infrastructure opportunities, Mellor says that managers have to find the right contractual structure which can protect investors whilst also achieving return targets.

“The fabled battery boom still remains just out of reach but there is definitely a growing appreciation of its need”

A broader approach

French greenfield investor Meridiam takes a broad view on what energy transition investing means. Partner, corporate development director Julien Touati says that it would be “a major mistake” to be too strict about limiting energy transition exclusively to the energy sector.

“Energy efficiency actions, for instance, rarely make sense if undertaken on a pure standalone basis. Retrofitting the energy system of a building is often the opportunity to re-think the usage and undertake a wider rehabilitation.

“The same would apply to decarbonisation of transport. For us, supporting the shift to electric vehicles and/or biogas-fuelled heavy good vehicles



Lee Mellor, Ancala Partners

is a must-have of the transition, even before the actual emergence of so-called vehicle to grid solutions. Biogas, for instance, is as much waste treatment and support to social inclusion in rural areas as pure energy. Energy transition requires a holistic view,” he says.

Meridiam launched its Transition Fund in November 2015 at the COP21 summit in Paris.

In Europe, the firm has split the portfolio under three umbrellas: resilience of electric systems, which includes flexibility and storage; biogas and circular economy and smart city and clean mobility; which includes electromobility.

Meridiam is one of the few fund managers to have already invested in EV charging stations. Through the Transition Fund, in June 2018 it bought Dutch EV charging solutions company Allego and it is preparing the rollout of some 60 charging points throughout France, before expanding further into Europe.

Although not everyone is prepared to venture into EV charging, managers who look at energy transition investments within a mandate that goes beyond energy and renewables are more inclined to apply the label to a broader range of sectors.

Debt manager Edmond de Rothschild for instance sees interesting energy transition deal opportunities in the telecoms and, to a lesser extent, transport and social sectors.

In 2018, the manager launched the latest generation of its debt fund range through two vehicles – BRIDGE IV

Senior Energy Transition and BRIDGE IV Higher Yield.

The former focuses on energy transition assets, as defined under the French government's Energy and Ecological Transition for Climate Label. The label covers a broad range of asset types, and allows for investments in sectors including renewables; social infrastructure; telecoms and transport.

CIO Jean-Francis Dusch explains: "We launched BRIDGE IV Senior Energy Transition in the continuity of our broader senior offering and analysing energy transition criteria, we decided we could apply for the label and once obtained carry on investing across all sectors whilst further demonstrating Edmond de Rothschild's commitment to ESG and energy transition."

French manager InfraVia has been applying its core-plus approach to energy transition since inception 10 years ago and agrees that this space has expanded far beyond mainstream renewables.

"Digital innovation is broadening the horizon when it comes to energy transition. Energy efficiency, energy storage and smart metering have huge potential and scalability going forward," says Bruno Candes, partner at the firm.

While he acknowledges that EV charging "seems to be getting big", Candes says that InfraVia remains sceptical about the business model which, as it stands, is likely to end up resulting in hefty prices on the end consumer.

The social aspect

To institutional investor Northern LGPS, the pension consortium including the pension funds for Great Manchester, Merseyside and West Yorkshire, energy transition has very much a social dimension.

Paddy Dowdall, assistant executive director at Greater Manchester Pension Fund (GMPF), says that Northern LGPS has started looking into energy transition in November 2017 in response to concerns from stakeholders and in line with a natural progression of its policies on

climate change.

In 2018, the pension scheme signed up to Investing in a Just Transition Initiative which focuses on delivering a transition to a low-carbon economy while supporting an inclusive economy with a particular focus on workers and communities across the UK.

"There are relatively limited climate related investment opportunities in the public markets with more opportunities existing in the private markets"

Its five pillars include broadening the understanding of systemic risks from climate change by factoring in issues such as social exclusion and increasing inequality; uncovering investment opportunities that combine climate and social goals and contributing to societal goals including existing responsibilities to respect international human rights and labour standards.

"We are aiming to work with the Investing in a Just Transition initiative to integrate their principles into our policies and practices, and build upon our existing capabilities and relationships with the Northern LGPS pool," Dowdall says.

Dowdall also explains that as part of transitioning to a low carbon economy from a portfolio that was historically quite exposed to fossil fuel companies, GMPF is looking to replace around £2 billion (\$2.54 billion) of passive, index-tracking investments with an enhanced approach that would significantly reduce GMPF's link to carbon emissions within the next financial year.

"Climate-related investment

opportunities are also available in areas such as energy efficiency, choice of energy sources, products and services and new markets. We consider that currently there are relatively limited climate related investment opportunities in the public markets with more opportunities existing in the private markets across private equity, private debt, infrastructure and real assets. This has asset allocation implications due to the illiquidity and complexity of some of these asset classes," Dowdall adds.

Going way beyond the traditional energy-related assets, the pension fund manager includes the East Anglia and South West rail franchises in the energy transition bucket as it replaces "old rolling stock, creating faster, more frequent and less polluting journeys." Northern LGPS invested some £100 million in this deal as part of GLIL, the infrastructure platform also comprising the London Pensions Fund Authority, West Yorkshire, Merseyside and Lancashire County Council pension funds.

"Another innovative approach adopted by GMPF is an allocation of up to £210 million into an impact portfolio. This portfolio has the twin aims of generating a commercial return and delivering a positive local impact," Dowdall explains.

Investments made in this portfolio include the Albion Community Power, a £20 million commitment to a power generation company seeking to develop community-scale renewable energy projects; and the Iona North West Investments, a £40 million commitment into new and existing environmental infrastructure projects in the North West, "which will create hundreds of jobs from clean energy funding in the coming years," Dowdall stresses.

In terms of funds, Northern LGPS has invested in Archlight Energy Partners VI (\$45 million); I Squared Infrastructure (\$50 million); Impax New Energy Investors II (€11 million) and Capital Dynamics Clean Energy Infrastructure (\$32 million) as part of its energy transition commitment. ■

Changing market dynamics

Brazil is aiming to significantly increase non-hydro renewables generation but developers are having to turn to new revenue and financing sources to meet these goals. By Juliana Ennes.

The Brazilian power auction scheduled for 17 October 2019 has registered a record of capacity offered, totaling more than 100GW split across 1,829 projects. Renewable power plants – including wind, solar PV, biomass and small hydros – accounted for 97% of the number of projects registered to compete in the auction. And this is for a procurement that is opened for all technologies, including gas-fired and coal power plants.

The high interest in building renewable projects in Brazil reflects the maturity achieved by the industry, but also brings new challenges.

Challenges include new forms of contracts. The amount of power offered in the auction is certainly much higher than what will be contracted, as has been the case with previous procurements in the country.

This lack of certainty in auctions has started to push developers towards private PPAs and even the spot market, which is something very new in Brazil.

Prospective developers also face financing challenges. If the country's economy starts to grow again as the new government has promised, abundant capital could rapidly turn into a severe shortage of financing for infrastructure projects.

Brazil's renewables evolution

The high reliance on hydropower, which responds for more than 70% of the country's power generation, has exposed Brazil's electricity mix to droughts. It has also made environmental licensing more challenging, since most rivers yet to be explored are located in regions of dense forest.

Brazil is the fifth largest country

in the world by land mass and has very high capacity factors for both wind and solar projects.

Taking advantage of this natural abundance, the country was an early moving in establishing a local renewables market.

The country incentivized development of onshore non-conventional renewable projects through public auctions and cheap financing from development banks. The country established minimum requirements of local equipment content for each project, leading to the development of a domestic supply chain industry, especially for wind projects.

Power regulator Aneel started holding power auctions regularly in 2005 and in 2009 it started holding procurements focused on wind, biomass and small hydropower plants. In 2014, solar PV farms were included in the long-term contracts of power supply.

The country leads wind generation in Latin America and registered fifth place in the world in 2018 in terms of number of wind farms, with approximately 15GW of capacity spread across 600 sites.

Even with renewable projects in the country reaching competitive prices, Brazil still holds technology-specific auctions, such as the procurement process scheduled for 28 June, which will contract hydropower, wind, solar and biomass projects to start generating in 2023.

The government forecasts, according to the 10-year energy expansion plan (PDE 2027), that the country needs to invest around R400 billion (\$102 billion) in the power sector to guarantee enough supply in a scenario of an average GDP growth of 2.8% a year.

Utility-scale renewable generation will account for more than half of this

total, or roughly R226 billion in required investment. PDE 2027 highlights a non-hydroelectric generation growth of about 3% per year, reaching up to 28% of the domestic energy mix by 2027.

Power prices in Brazil

Despite having an abundance of cheap-to-generate hydropower, great conditions for renewable generation and one of the largest gas reserves, Brazil is on course to have one of the most expensive power prices in the world.

Electricity bills end up including additional costs to maintain thermal generation in remote areas that are not interconnected to the national grid, such as the state of Roraima, which recently received its own power auction to incentivize local production.

Even the national grid has needed to use thermoelectric plants to provide reliability to the system in moments of lower rains, increasing prices to the final consumer.

Bills also include fees paid to transmission companies; fees to support the state-owned Eletrobras operations; in addition to high national and state taxes.

However, these high prices are not always reflected at the contracts provided in power auctions. The high competition driven by the large number of projects registered in the auctions are dropping prices paid for generators.

With lower prices and long-term PPAs through public procurements hard to win, Brazil is seeing for the first time the development of a private PPA market, something already established in more developed economies. Some projects even register only a small percentage of the capacity in the auctions (which guarantees priority to use transmission lines) and save

the largest capacity for the spot market, betting on higher prices.

From the offtakers perspective, the goal of having bilateral PPAs is to secure lower power prices in the long run, and improve its green credentials – increasingly important to industries seen as highly polluting.

In January 2019, mining company Vale and Casa dos Ventos signed a contract for the supply of wind power over 23 years. This was the longest wind contract ever signed in Brazil.

Casa dos Ventos is developing the 151.2MW Folha Larga Sul wind farm. The contract included a clause allowing Vale, the offtaker, to become a shareholder in the project. It will have the option of acquiring a minority position; buying 60%, which corresponds to the amount of power it will buy from the plant; or even asking for the totally of the plant.

Becoming an equity investor also helps with price. Since the long-term auctions are not as attractive anymore and the country still wants to push for more renewables, Aneel has a rule in which renewable projects that have offtakers as investors or signing lease contracts will receive cost advantages that can reduce power prices up to 40%.

The contract was structured to fit into the “self-production” definition, exempt from sectorial charges such as the payment for energy development (CDE) – a sectorial fund paid by all power consumers through the tariffs. Brazil also has a law establishing a discount of at least 50% on transmission and distribution costs for renewable projects, including solar, wind, biomass and co-generation.

“Now there is a profusion of similar contracts testing the market,” said Paloma Lima, partner at Demarest. She is working on two large private PPAs contracts.

It means that, even with a still high level of skepticism regarding the economic recovery, Brazil is still seeing new renewable projects being developed, and their financing structure is changing.

Located in the Northeastern state of Bahia, the project received financing from



Paloma Lima, Demarest

regional development bank BNB. With a total cost of R750 million (\$\$191.2 million), the project received R550 million from BNB and the remaining R200 million will be paid in cash.

Development banks

BNDES was historically the first stop for developers looking for financing. It used to have subsidized interest rates and very-long term contracts. But this has changed. In an attempt to reduce the bank’s presence in infrastructure financing, a sector seen as capable of getting financing with the private sector, the government increased BNDES’ interest rates, ending the subsidies it provided.

Meanwhile, economic recession in Brazil and consequent low inflationary pressures led to a steep decrease in the general interest rates. That means that for the first in history BNDES is providing financing more costly than market rates. It does not mean, however, that all projects automatically migrated to the capital markets.

Part of the projects that would before look for BNDES’ loans started reaching out to another development bank in the country, BNB, which only finances projects located in the Northeast region. BNB still offers subsidized interest rates, long-term contracts and has no intention of reducing its efforts to finances renewable projects.

BNDES has received a lot of criticism from the private sector for offering subsidized interest rates. When

everyone thought that a larger window of opportunities would open for commercial banks and institutional investors, BNB stepped up in the last two years, increased its presence on the energy sector and has no intention of stepping back.

Even though it can only finance projects located in the Northeast region of the country, its presence is relevant because most renewable projects are in that region. Today, 86% of Brazil’s total wind installed capacity (14,873MW) and around 70% of all utility-scale solar PV generation are located in the Northeast.

“I understand the request from commercial banks to see a lower participation of development banks, but the reduction of BNDES will already open a lot of opportunities for them. And there is a trade-off that society has to take into consideration. A great part of the low power prices offered by renewables in the auctions are due to cheap financing they can get with BNB. If commercial banks were to finance this, the costs would be higher and thus power prices would increase,” said Sergio Brito Clark, manager at BNB, superintendence of financial operations and capital markets.

A banker who preferred not to be identified argued, however, that the subsidies to provide cheap financing are not taken into consideration in that case. “This money could be invested somewhere else, developing other sectors of the economy, so it does have a cost to the consumers,” she believes.

Furthermore, the use of development banks is a political decision, which means that, despite BNB’s desire to remain strong in the financing of renewables, if the new administration decides that it should focus on other types of projects, the institution will have to comply. And the government of President Jair Bolsonaro is more market-focused, which could led to changes in policy.

In 2018, BNB’s budget was R32.64 billion, out of which infrastructure represented R16.5 billion. Within the infrastructure budget, wind accounts for 30.9% and solar, 19.7%.

Capital Markets

With BNDES stepping back and the emergence of favorable macroeconomic conditions, the country has started to see a new source of financing bloom. Companies started accessing capital markets for long-term financing as a direct consequence of the drop in interest rates. The Brazilian Central Bank's benchmark interest rate, Selic, is 6.5% per year, while at the height of the country's economic crisis in 2016 it reached 14.25%.

Within this scenario, emissions of so-called infrastructure debentures rose steeply 163% year-on-year in 2018. In 2017, the emissions of these papers totaled R9.145 billion, a number that expanded to R23.9 billion in 2018.

"Today, there is a lot of liquidity in the Brazilian market, with funds created specifically to invest in infrastructure. They are looking for these debentures, whose volume has grown a lot since last year, financing primarily transmission lines, wind and solar projects," said the head of project finance and asset based finance from Santander Brazil, Edson Nobuo Ogawa.

There are today in Brazil around 90 funds specifically investing in infrastructure debentures, created by a wide range of financial institutions, from large banks such as Santander to boutique investment institutions like Sparta, Orama and Devant. One of the first funds focused on infrastructure debentures is Kinea, from Itau, which opened in 2017 as a bet that the economic growth would bring a bigger flow in infrastructure projects.

Banco do Brasil, Votorantim Wealth Management and Highland Capital Brasil also launched a fund together, which later did an IPO to be negotiated on the secondary market.

The funds helped solve a problem that was starting to affect various projects in the country. Many infrastructure debentures are convertible to equity shares, which make the buyers of these papers not only creditors but also potential equity investors. Project sponsors needed to approve waivers with a spread pool of investors, which almost took some

SPVs to bankruptcy, due the difficulty of reaching all investors for votes on a timely manner. With funds, the managers can respond for some of these waivers.

Rubens Benevides, head of infrastructure Latin America for Machen Capital, believes that the volume of infrastructure debentures financing the power sector might triple in 2021, compared to 2018. "There are alternatives to the development banks that have already been tested. For renewables, I believe the growth in emissions of debentures with fill this gap. (...) It is also important to understand that multilaterals and ECAs have started financing in reais



Edson Nobuo Ogawa, Santander Brazil

(local currency), especially providing guarantees, which approximates the emissions of debentures to a AAA structure, even though the country is not investment grade," said Benevides.

Also called "incentivized debentures," the volume of emissions could grow at a much faster pace if the government approves some regulatory changes under consideration. Today, individual investors get a fiscal benefit if they invest in infrastructure debentures, an advantage not yet extended to institutional investors.

Companies that have launched these papers in recent years see an opportunity to make new emissions at lower costs. But those who issued the incentivized debentures face a legal prohibition: these debentures cannot be redeemed or paid in advance to cease to exist before their maturity.

The government has not announced any official changes so far, but is in

talks with market participants, receiving proposals to improve the financial product, which could be approved before year-end 2019.

With the emission of debentures, capital markets operations in Brazil are providing financing beyond a 15-year tenor, which is something unprecedented in the country.

There are, however, some drawbacks in relying too much on debentures. They usually do not cover construction risk – a type of risk that banks in Brazil are used to covering, since BNDES did not take this risk either. Commercial banks have been mainly acting in the first years of development, construction period and ramp-up of projects.

Now, with the substitution of part of BNDES's financing for capital markets, banks are likely to keep this role and provide more long-term financing.

"BNDES has turned off the tap of cash, in a constructive manner. I hear a lot from bankers that they have money in abundance to invest, while lacking new projects. I believe that financing of new projects will include a mix of capital markets and bank loans, depending on the structure of the project. There is no optimal solution that fits all sizes. The money will come from local and international banks competing fiercely, with the catalytic presence of multilaterals," said Paloma Lima, from Demarest.

Another source of cash willing to invest more heavily in Brazil's renewables sector are multilaterals and ECAs. They might find their slice of the market when helping to bring other investors to the negotiation table. Project finance in Brazil is still mostly provided in local currency, and many times with the need of external guarantees – a role development banks, multilaterals and ECAs are usually happy to fulfill.

If Brazil manages to approve its macroeconomic reforms and keep its economy growing, it might see further evolution of capital markets and new financing structures that are still novel to this still developing country. ■

DATA ANALYSIS: European renewable energy continues to attract a wide range of investors. By Iliyan Videnov.

Laws of attraction

European renewable energy assets remain popular among fund managers and their investors. Not only do investments in this sector inherently possess a lower risk – partly explained by the relatively low cost of their implementation, low maintenance costs post-construction and often long-term PPAs with either public or private entities – but the technology employed by renewable energy projects is also rapidly becoming cheaper.

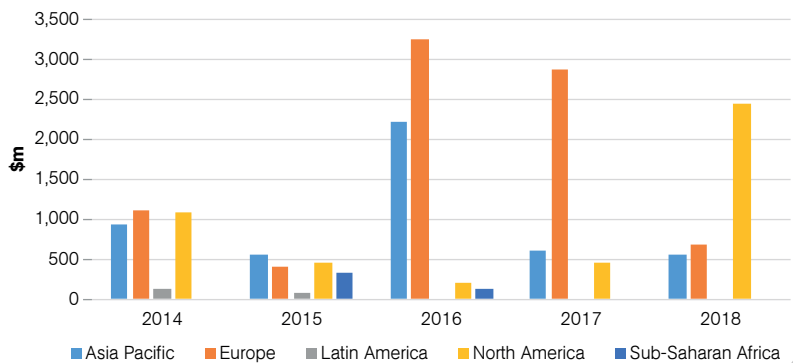
London-listed TRIG at the end of April raised £302 million (\$399 million) in a heavily oversubscribed first tranche of its share issuance programme by offering 256 million shares at a price of £1.14 per share.

Despite having a relatively narrow target – renewables predominantly in the UK – the fund was massively popular, prompting TRIG to increase the number of available shares from 150 million to 256 million and put some investors on hold until the next share issue.

Going green(er)

IJGlobal data reflects Europe's push for

Fundraising by renewables-focused funds at final close by target region



Source: IJGlobal

renewables, showing that out of all the regions, Europe is home to the best part of operational (57%) and in-development (33%) renewable energy assets.

When it comes to region-exclusive infra fundraising, the European market is right for the investors' appetite.

IJInvestor data shows that in the last five years, 45% of nearly \$18.5 billion in capital raised by funds targeting renewables projects has gone to European-focused funds.

On average, these vehicles reach 90% of their target size at final closing, outperformed only by those targeting Asia Pacific (96%).

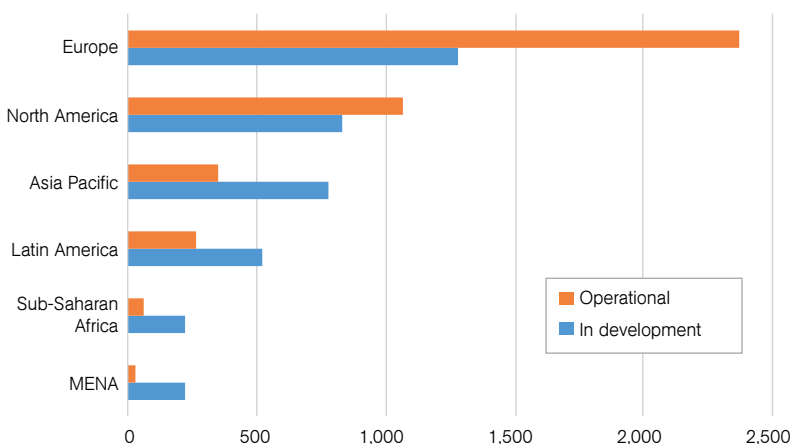
All in all, Europe-bound funds are proving to be very profitable for investors.

Serge Savasta, managing partner at Omnes, recently said of the maturing Capenergie 2: "[T]he investors have already obtained 2x on their investments even though we have two portfolio companies of €1-2 million still to be sold."

IJInvestor data also shows that 23% of funds targeting Europe with a final close in the last five years, target renewables exclusively. The figure goes up to 71% if only sector-specific funds are considered, excluding those with a multi-sector mandate.

The prospects for 2019 and beyond for renewables are strong. Europe is at the forefront with 40% of Europe-dedicated funds currently in fundraising focusing exclusively on renewables. The figure doubles when multi-sector funds are excluded. Overall, almost all of the funds targeting the European energy sector are including renewables in their mandate. ■

Number of renewable energy assets by region



Source: IJGlobal

DEAL ANALYSIS: Does this public takeover bid point to a new renewable energy trend in the Alpine state? By Sophie Mellor.

Public takeover of Alpiq

As Switzerland phases out coal-fired and nuclear generation capacity, the country's dependence on hydropower increases. This development has made local energy company Alpiq an attractive asset, and its public takeover, a harbinger for Switzerland's increasing reliance on hydropower.

In the transition to a more sustainable energy market, hydropower gets less media attention than wind and solar but represents 16.4% of the world's electricity generation. It offers stable, predictable returns through a long-proven technology, large storage capacity and low operating and maintenance costs.

Hydropower is dependent on the right geography and investors willing to pay the heavy capex to develop the plants, however, but Switzerland is particularly suited to accommodate these requirements. The mountainous Alpine state has a wealth of flowing rivers and a growing number of investors who understand the potential of hydro.

Credit Suisse Energy Infrastructure Partners (CSEIP) is one of these investors.

The renewables arm of Credit Suisse Investment Foundation has created an unlisted open-ended fund whose two strategic pillars of investment are energy distribution and hydropower, and its latest acquisition brings hydropower a step closer to becoming the most important aspect of Swiss energy.

The asset

Swiss energy utility Alpiq has a market share of 15-20% of total Swiss energy production.

The firm generates 4,230GWh with an installed capacity of 2.7GW of hydropower production which – due to its carbon-free, efficient and highly flexible nature – is its main source of

energy. All of Alpiq's hydropower plants are in Switzerland.

Alpiq also holds stakes in small-scale hydropower, wind and solar PV generation assets with a combined installed capacity of 328MW and two nuclear plants in Switzerland – Gösgen and Leibstadt – which have a combined installed capacity of 738MW.

Shortly before CSEIP's investment, Alpiq divested two Czech coal fired power plants – Kladno and Zlín – to Seven Energy for €280 million (\$313 million).

This divestment reduced Alpiq's carbon footprint by 60% and meant it had exited entirely from conventional thermal power assets.

A year before the divestment in July 2018, Alpiq also sold Alpiq InTec and Alpiq Kraftanlagen München – its engineering and services business – to focus solely on its energy trading, solutions and power generation businesses.

These two transactions transformed Alpiq into a hydropower-focused renewable energy utility and also into a very attractive investment for CSEIP.

The target

The deal began when EDF signed on a divestment of its 25.04% stake in Alpiq on 4 April (2019) to EOS Holding and Primeo Energie for Swfr489 million (\$493 million) at Swfr70 per share.

EOS Holding is a firm that represents the major electricity companies in Western Switzerland. Each firm bought 50% of EDF's shares.

After the closing of the deal the shareholding makeup of the company was: EOS Holding (43.96%); Primeo Energie (26.17%); public shareholders (12.09%); EBL (7.135); Canton of

Solothurn (5.61%); Aziende Industriali de Lugano (2.13%); Eniwa (2%); and WWZ (0.91%).

The deal was financed with mandatory exchange loans from CSEIP, repayable with Alpiq shares upon maturity.

CSEIP did not purchase a stake in Alpiq outright because EDF wished to divest to existing shareholders who had pre-emptive rights.

However, due to the size of EDF's stake, many existing investors did not have the financial resources to cover the cost, leading to CSEIP acting as a lender.

Following the deal a joint statement made by the investors of Alpiq said that the company will focus primarily on the preservation and further development of hydro in Switzerland.

On 30 May, a subsidiary of CSEIP named Schweizer Kraftwerksbeteiligungs, EOS Holding and the consortium of Swiss minority shareholders jointly announced the voluntary takeover of Alpiq's remaining 12.09% of public shares listed on the SIX Swiss Exchange.

EDF's 25.04% of shares and 12.09% of public shares will go to CSEIP where a shareholder hybrid loan will be converted into shares to dilute their holdings to 33%.

Each group is expected to own a third of the company making the shareholder breakdown: Credit Suisse Energy Infrastructure Switzerland (33.3%); EOS Holding (33.3%); and a consortium of minority Swiss shareholders, i.e. Primeo Energie, EBL, Canton of Solothurn Aziende Industriali de Lugano, Eniwa and WWZ (33.3%).

The takeover shares will be offered at the current share price which is also the same price EDF sold their shares for, Swfr70. By CSEIP providing mandatory

exchange loans, it was able to structure the sale as a deal among shareholders, before launching its own takeover.

The offer period is expected to begin on 24 July, and the public takeover is expected to be completed on 9 October. Following that, Alpiq Holding will be delisted from the SIX Swiss Exchange.

Buy-side advisers on the deal included Credit Suisse as financial adviser to CSEIP, Baer & Karrer as legal adviser to Primeo Energie and CSEIP, and Baker McKenzie as legal adviser to CSEIP.

Changing supply to meet greater demand

This deal means one of the largest power generators in Switzerland is now in all

Swiss hands. With hydropower now a priority, Alpiq is only expected to grow as Switzerland moves away from fossil fuels and nuclear power.

To curb CO₂ emissions in Switzerland, heavy levies are being imposed on fossil fuels. The government aims to reduce thermal power generation and emissions by 20% and increase renewable energy generation by 50%.

Non-hydro renewables have not historically been favoured in Switzerland, with wind farms in particular attracting public criticism for spoiling landscapes. Geothermal is also mistrusted due to fears the technology may cause earthquakes.

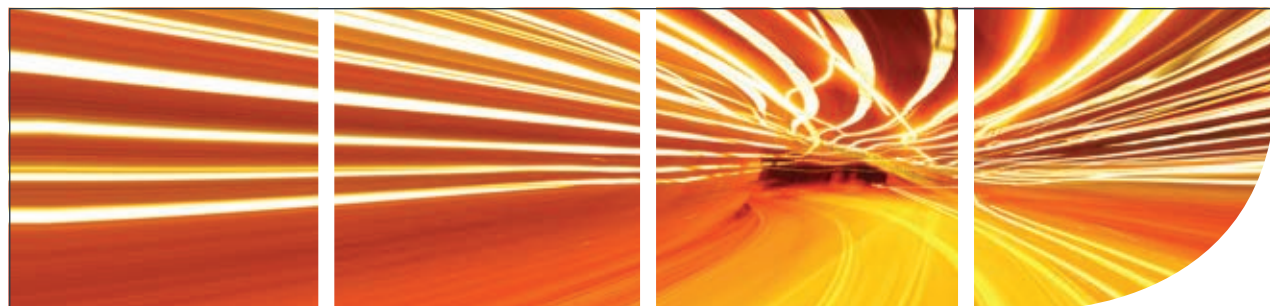
Managing director of CSEIP, Dominik

Bollier, said: "When you look at how energy is being transformed in Europe, nuclear and coal energy are being phased out while a stochastic energy is replacing it, you need something that stabilizes the system."

With the limits placed on fossil fuels, the natural decline in nuclear power and the lacklustre growth in other renewables, hydropower is the only feasible option to bridge the gap into a more renewable Switzerland.

And with sardonic irony, hydropower can only get better as climate change gets worse. Temperatures will rise and more water will flow from the Swiss Alps, making Switzerland a privileged centre for new, clean energy in the dirtier days ahead. ■

Timeline



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MLAs

Rank June 2018-May 2019	Company	Deal value (USDm) June 2018-May 2019
1	MUFG	5,262
2	Sumitomo Mitsui Financial Group	3,541
3	Mizuho Financial Group	3,145
4	BNP Paribas	2,505
5	Credit Agricole Group	2,201
6	Natixis	1,970
7	Santander	1,630
8	JP Morgan	1,581
9	ING Group	1,538
10	Citigroup	1,331
11	Societe Generale	1,230
12	Morgan Stanley	1,171
13	Royal Bank of Canada	1,120
14	HSBC	1,061
15	Bank of America	1,023
16	ICBC	986
17	Investec	979
18	Goldman Sachs	935
19	Barclays	890
20	Credit Suisse	840

Financial Advisers

Rank June 2018- May 2019	Company	Deal volume June 2018-May 2019
1	Santander	9
2	Macquarie	7
3	Sumitomo Mitsui Financial Group	6
4	Royal Bank of Canada	4
=	JP Morgan	4
=	EY	4
7	KPMG	3
=	Citigroup	3
=	Morgan Stanley	3
=	Lummus Consultants International	3
11	Toronto-Dominion Bank	2
=	Scotiabank	2
=	Standard Chartered Bank	2
=	Bank of America	2
=	Itausa Investimentos Itau	2
=	Deloitte	2
17	Alantra	1
=	Capital Partners Group	1
=	Powder Day Capital	1
=	GrandView Capital	1

Legal Advisers

Rank June 2018- May 2019	Company	Deal volume June 2018-May 2019
1	Latham & Watkins	28
2	Hunton Andrews Kurth	21
3	Milbank	18
4	Simpson Thacher & Bartlett	17
5	White & Case	15
=	Allen & Overy	15
7	Clifford Chance	14
8	Morgan Lewis & Bockius	12
=	Norton Rose Fulbright	12
10	Linklaters	9
11	Orrick Herrington & Sutcliffe	8
=	Shearman & Sterling	8
13	Paul Hastings	7
=	McCarthy Tetrault	7
=	Squire Patton Boggs	7
=	Skadden	7
17	Hogan Lovells	5
=	Sidley Austin	5
19	King & Spalding	4
=	DLA Piper	4

Sponsors

Rank June 2018- May 2019	Company	Deal value (USDm) June 2018-May 2019
1	EDF	10,903
2	Engie	7,966
3	Nextera Energy	6,442
4	Hydro One	5,178
5	Enel	5,000
6	Government of Australia	4,700
7	Sumitomo Corporation	3,684
8	Avangrid	2,800
9	American Electric Power	2,641
10	Kobe Steel Corporation	2,155
11	Uniper	2,117
12	Edison International	1,850
13	Government of Bangladesh	1,818
14	Eskom	1,755
15	Marubeni	1,742
16	KEPCO	1,650
17	Duke Energy	1,600
=	Berkshire Hathaway	1,600
19	China Three Gorges Corporation	1,570
20	Calpine	1,445

RENEWABLES – INFRASTRUCTURE FINANCE – LEAGUE TABLES

MLAs

Rank June 2018- May 2019	Company	Deal value (USDm) June 2018-May 2019
1	SMBC	4,068
2	Santander	3,671
3	MUFG	3,327
4	Natixis	3,197
5	ING Group	2,950
6	Societe Generale	2,178
7	BNP Paribas	2,026
8	Mizuho Financial Group	1,988
9	KfW	1,889
10	Credit Agricole Group	1,829
11	NordLB	1,733
12	National Australia Bank	1,540
13	Siemens	1,444
14	Rabobank	1,334
15	Key Bank	1,210
16	Bank of China	1,061
17	Banco Sabadell	1,038
18	Royal Bank of Scotland	900
19	Commerzbank	864
20	Barclays	851

Financial Advisers

Rank June 2018- May 2019	Company	Deal volume June 2018-May 2019
1	Macquarie	23
2	EY	19
3	PwC	14
4	Astris Finance	10
5	Eaglestone	9
=	KPMG	9
=	Santander	9
8	Royal Bank of Canada	7
=	MUFG	7
10	Green Giraffe	6
=	CohnReznick	6
=	Societe Generale	6
13	Rothschild	5
=	Elgar Middleton	5
15	Citigroup	4
=	JP Morgan	4
=	AtZ Advisors	4
18	QMPF	3
=	JCRA	3
=	BNP Paribas	3

Legal Advisers

Rank June 2018- May 2019	Company	Deal volume June 2018-May 2019
1	Clifford Chance	52
2	Norton Rose Fulbright	48
3	Linklaters	41
=	Watson Farley & Williams	41
5	Allen & Overy	31
6	Herbert Smith Freehills	30
7	Ashurst	28
8	Latham & Watkins	27
9	DLA Piper	26
10	White & Case	24
11	Orrick Herrington & Sutcliffe	18
=	Milbank	18
13	Winston & Strawn	16
14	CMS	15
15	Baker McKenzie	13
16	Morgan Lewis & Bockius	12
17	Cuatrecasas	11
18	Bowman Gilfillan	9
=	Ledwaba Mazwai	9
=	Edward Nathan Sonnenbergs	9

Sponsors

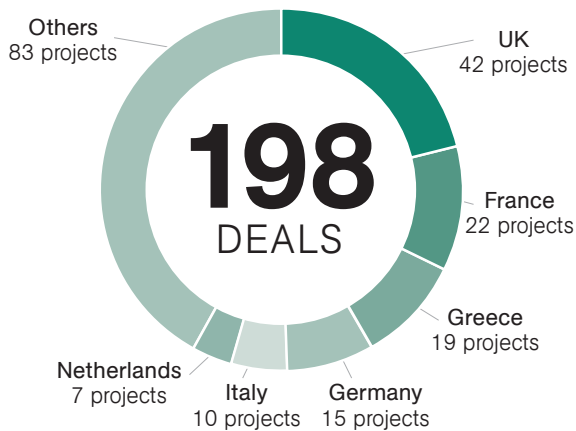
Rank June 2018- May 2019	Company	Deal value (USDm) June 2018-May 2019
1	Global Infrastructure Partners	5,812
2	Macquarie	4,803
3	Consolidated Edison	4,342
4	Innervex Renewable Energy	2,996
5	Engie	2,743
6	Nextera Energy	2,544
7	Orsted	2,364
8	Dubai Electricity & Water Authority	2,346
9	Iberdrola Group	2,172
10	Clearway Energy	2,131
11	Enel	2,112
12	Capital Dynamics	2,012
13	Canada Pension Plan Investment Board	1,754
14	Duke Energy	1,722
15	IXM	1,684
16	JP Morgan	1,617
17	Equinor	1,591
18	Kansai Electric Power	1,572
19	Berkshire Hathaway	1,550
20	Gruppo Falck	1,413

Europe

INSIDE

Talasol solar farm, Spain
London (Stock Exchange) calling
Rookery South ERF, UK

Pipeline & procurement deals



Projects with recent tender updates

Dogger Bank Creyke Beck B Offshore Wind Farm
Greece-Bulgaria Natural Gas Interconnector
Hornsea II Offshore Wind Farm
Irish Social Housing Bundle II
Kastelli International Airport
Nord Stream 2 Gas Pipeline
East Anglia Two Offshore Wind Farm
Loire-Atlantique Fibre Optic Network

Closed deal values by sector

Oil & Gas: \$5.92 billion

Transport: \$5.63 billion

Renewables: \$4.95 billion

Telecoms: \$4.09 billion

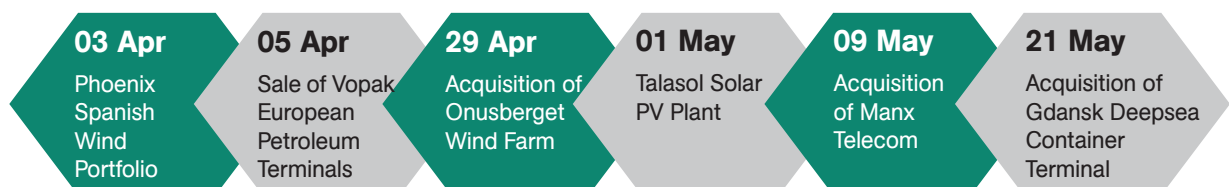
Power: \$708 million

Social & defence: \$182 million

Countries with highest closed deal values

UK	\$7.79 billion	15
Luxembourg, Netherlands	\$3.14 billion	1
Poland	\$2.04 billion	3
Czech Republic	\$2.00 billion	1
Germany, Netherlands	\$1.39 billion	2
Spain	\$1.14 billion	10
Norway	\$1.12 billion	1
Portugal	\$919 million	2
Estonia, Germany, Netherlands, Spain	\$815 million	1
France	\$562 million	9
Italy	\$511 million	6
Iceland	\$300 million	2
Netherlands	\$281 million	2
Turkey	\$235 million	1
Germany	\$227 million	6
Finland	\$226 million	2
Belgium, Germany	\$157 million	1

Transactions that reached financial close



Source: IJGlobal, from 1 April 2019 to 31 May 2019

DEAL ANALYSIS: Featuring only a partial power hedge, this financing shows Spain leading the way in innovative renewable energy deals. By Elliot Hayes.

Talasol solar farm, Spain

Spain boosts a large pipeline of new wind and solar projects, and pressure to finance these zero-subsidy projects has led to innovative financing solutions... and a growing comfort with merchant risk.

Almost exactly one year after BayWa r.e. brought the 170MW Don Rodrigo solar farm across the finishing line – at the time the largest unsubsidised solar project in Spain – a sponsor consortium led by Ellomay Capital reached financial close on 300MW Talasol solar PV, showing how fast the market is evolving.

Located in the municipality of Talaván in Cáceres, in the west of Spain, Talasol also entails the construction of 400/30kV substations and a 23.7km high-voltage line connecting it to the local grid.

Financing

The project capex is €228 million (\$256 million), of which €131 million debt will be provided by ABN AMRO Bank, European Investment Bank (EIB), Deutsche Bank and Rabobank.

Ellomay initially signed on the financing with EIB and Deutsche Bank late last year (2018) with the other banks joining in subsequent months. EIB will provide €70 million mobilized through the European Fund for Strategic Investments, while the remaining €61 million will be provided by the commercial lenders.

The debt has a 15-year tenor and is priced at 225bp above six-month Euribor during construction, stepping up to around 250bp when commercial operation

commences. The construction period is expected to be 16 months.

Ellomay and co-sponsors Capital Dynamics and Fond-ICO Infraestructuras will round out the financing package with a total of €91 million equity.

Shareholders

Ellomay announced that it was bringing on board Capital Dynamics and Fond-ICO Infraestructuras as equity partners in April (2019), shortly before financial close.

Capital Dynamics, through GSE 3 UK, and private equity fund Fond-ICO Infraestructuras II closed on the acquisition of a combined 49% stake in Talasol Solar – the project's holding company – from Ellomay's wholly-owned subsidiary Ellomay Luxembourg on 30 April.

The new equity partners paid €16.1 million for the shareholding.

Ellomay said the purchase price reflects an asset value of around €33 million. Its expenses in connection with the project are roughly €21 million (around €10 million paid in May 2017 to acquire the project from a Spanish developer, with another €10 million spend developing it).

At the time of financial close on 1 May, the shareholding structure of Talasol Solar was: Ellomay Luxembourg (51%); Fond-ICO Infraestructuras II (24.5%); and GSE 3 UK (24.5%).

Power offtake

The project was not procured in a national auction and will sell its output on the

open electricity market. Revenue certainty is provided by a 10-year power swap described by Ellomay as a PPA.

An undisclosed energy company with a “solid investment grade credit rating and a pan-European asset base” will hedge 80% of the power sold by Talasol, based on the project's capture price rather than its base load price.

The financial hedge will cover 3,500-3,700GWh over the duration of the contract, which begins in 2020 when the plant is expected to reach commercial operations.

Mytilineos subsidiary Metka EGN, was awarded the €200 million EPC contract in June 2018. Fichtner is undertaking the engineering contract.

Advisers

Deutsche Bank acted as financial adviser to Ellomay.

Ellomay initially appointed Baker McKenzie as its legal counsel, though this was partially transferred to Pinsent Masons when Pablo Dorronsoro Martín and Marta Salzar Diaz switched firms. Baker McKenzie advised Ellomay on the M&A, equity and offtake arrangements, while Pinsent Masons advised on the public law and construction elements of the deal.

Advising on the acquisition of the 49% stake in Talasol Solar were: Loyens & Loeff (legal counsel to the seller); Watson Farley & Williams (legal counsel to the buyers); and Enertis (technical adviser to the buyers). ■

Timeline



NEWS ANALYSIS: Good financial weather on the London Stock Exchange continues to turn heads. By Arran Brown.

London calling

The London Stock Exchange (LSE) continues to entice managers of prospective listed renewable energy funds.

Its appeal has in recent months attracted two vehicles sharing an intriguing set of features: both denominated in non-sterling currencies; both headquartered abroad; and neither targeting assets in the UK.

Hamburg-based fund manager Aquila Capital launched its maiden listed vehicle targeting renewables across Continental Europe and Ireland in May. The Euro-denominated Aquila European Renewables Income Fund raised €154 million (\$174 million) through the exercise – just half of its stated target of €300 million. The results of the IPO provided new insight into investor appetite for green products.

Meanwhile, the aptly named US Solar Fund, managed by New Energy Solar Management, announced in February its intention to launch an IPO on the LSE. The vehicle, which has a sister fund – New Energy Solar – listed on the Australian Stock Exchange, raised a respectable \$200 million of a \$250 million target.

This begs the question why London is the destination for would-be renewable energy funds, despite concerns around Brexit and increased competition. The answer, it seems, is borne out by a well-educated investor base, a historically solid record financially, and broader trends in investor appetite.

Current renewables funds

New entrants Aquila European Renewables Income Fund and US Solar Fund join an established list of funds in the space.

Notably, Foresight Group acquired

the mandate for JLEN from the John Laing Group in June (2019) and will advise the JLEN fund in addition to the Foresight Solar Fund.

One listed renewables manager *IJInvestor* spoke to said that the newcomers were taking advantage of the positive momentum for renewables in the UK, while recognising the difficulty of launching a UK-focused product and instead looking to less crowded geographies.

“If you compare the register across the various listed funds in the UK, you will see a lot of common names”

This may also be why other London-listed vehicles launched in the past year have used more unusual technologies and strategies as a differentiating feature. Examples of this include the Gresham House Energy Storage Fund and SDCL Energy Efficiency Income Trust.

Investors

Of several fund managers *IJInvestor* spoke to, one consistent refrain in response to why London is a go-to destination for listing these vehicles was the sophistication, and high level of education of investors here.

One manager said: “By virtue of the market being first established in the UK, a lot of people have followed its evolution

and benefitted throughout the years to become more savvy.”

Another manager echoed this: “These products are extremely well understood by UK investors, and that’s why you will continue to see London as the clear option for a firm, irrespective of where they come from, to try to raise capital here.”

Beyond that, a third manager spoke of the London market having the deepest pool of equity capital available – in particular compared with the US – at least as far as renewables are concerned, in part explaining the US Solar Fund’s decision to list in London.

Aquila is understood to be targeting institutional investors, multi-asset funds, and private wealth. Other listed vehicles have a similar complexion. One manager said: “If you compare the register across the various listed funds in the UK you will see a lot of common names.”

Many of these London-based investors also have global businesses; they have the ability to fund in various currencies, and the ability to hedge this internally from a currency perspective.

LSE-listed renewable energy funds

- Greencoat UK Wind – March 2013 IPO
- Bluefield Solar Income Fund – July 2013 IPO
- The Renewables Infrastructure Group (TRIG) – July 2013 IPO
- Foresight Solar Fund – October 2013 IPO
- John Laing Environmental Assets Group (JLEN) – March 2014 IPO
- NextEnergy Solar Fund – April 2014 IPO

Aquila has ample experience raising private, closed-ended renewables funds, but different investor profiles are comfortable with different time periods of illiquidity.

Its European Hydropower Fund is a 20-year opportunity. For an investor to pull out entails going to the secondary market to find a counterparty to sell the holding.

One advantage for listed vehicles is the greater liquidity afforded to investors, although the largest investors have difficulty taking advantage of this.

One manager spoke of the larger pool of investors attracted to this feature, but pointed also to the other side of this coin: the strong focus on short-term performance.

However, many managers spoke of the strength of the transparent model of communicating with clients and the wider market afforded by listed vehicles – an advantage which instils consistency and potentially excellent advertisement.

Opportunity

All of the established renewables funds trade share price at a healthy premium to the net asset value (NAV), with the majority at or just above 10%. At the time of publishing, Bluefield was trading at a premium of 17%.

These premiums indicate the desirability of these shares, particularly considering the funds are paying predictable returns in the low-risk renewables sector.

Aquila is offering investors a dividend yield of 5% from 2021, with a total return of between 6-7.5%. According to FT markets data, most of the funds offer a dividend yield of 5.85% at the most. Foresight is targeting a 7% dividend. One broker suggested that the return was very healthy considering levels around and below 5% in some geographies and technologies.

Funds have launched in the past with targets of 6%. A listed renewables manager said of Aquila's offering: "The biggest question remains 'is level of return

high enough to attract investors?' Return expectation has decreased, evidence that if you want to raise new money to invest in operational subsidised assets you have to be prepared to accept lower returns than you could expect a few years ago."

A source close to the Aquila fundraise responded by saying: "Yield level is different in the UK compared to Europe which sets us apart. We have given ourselves a dividend target based on what we can deliver. In the end, the ability to cover the dividends is of vital importance to the market."

"By virtue of the market being first established in the UK, a lot of people have followed its evolution and benefitted throughout the years to become more savvy"

Whatever the case, established funds approaching the market are typically oversubscribed: one recent TRIG raise was three times oversubscribed, again illustrating the demand for these shares, their yields, and premium prices.

Macro trends and strategies

Beyond the naked appeal of consistently yielding funds is the asset class underpinning their yields. Infrastructure is currently viewed as a "sexy product" in the words of one player in the space.

They continued: "There is significant interest from investors on renewable generation, ESG, and sustainability targets. The number of investors asking about sustainability has increased significantly over the last few months. Investors are now very

aware they need to add an element of sustainability to their portfolio."

The prospect of fitting that bill – renewables – that have performed well and paying dividends since IPO presents investors with an excellent marriage of their dual goals.

The decision for investors then comes down to investment strategy exemplified by the US Solar Fund's single-technology focus, or Aquila's wider gambit incorporating solar, wind, and hydropower.

Two schools of thought diverge on the issue: one extols the security of broad mandates in securing attractive returns and flexibility of investment; the other favours the deep understanding inherent in specialist strategies and a more streamlined cash flow profile.

Aquila says theirs is a diversified offering whilst not compromising on the degree of specialisation.

"Aquila benefits from specialised hydro, wind, and solar teams – likewise on the asset management side there are dedicated teams for each technology. The combination of the three is beneficial from a portfolio because you are mixing generation profiles not just on a daily basis, but also on a seasonal basis."

As for competition, none of the managers *IJInvestor* spoke to were phased by the prospect: "The entirety of Europe's energy transition with its build-out targets for 2030 to 2040 are giving a lot of gaps those markets to be investing in."

Giving the new entrants hope that their products will enjoy the same success as their predecessors one player stated: "For any new product that gives investors exposure, even if not UK opportunity, if investors are comfortable with the investment proposition and they understand the market there is clearly a high chance of success."

Another spoke of the great validation of investment manager's capabilities to launch a listed product, but greater still is to maintain the performance of the fund as an exposed, regularly reporting entity and pay dividends in a timely fashion. ■

DEAL ANALYSIS: Financial close on this energy-from-waste project was a long time coming. By Elliot Hayes.

Rookery South ERF, UK

After years of financial and environmental challenges, the owners of the 60MW Rookery South Energy Recovery Facility (ERF) at Rookery South Pit near Stewartby, Bedfordshire, brought the project to financial close.

Covanta, Green Investment Group (GIG) and Veolia are developing the project, which will provide 545,000 tonnes of annual treatment capacity for non-recyclable waste and features a 60MW combined heat and power (CHP) plant which will sell energy to the grid on a 100% merchant basis.

Veolia is sourcing the majority of the waste feedstock under long-term contracts, with the rest coming from commercial, industrial and municipal counterparties. Covanta will operate the plant once it reaches commercial operation, scheduled for 2022.

Hitachi Zosen Inova, meanwhile, will carry out the EPC work.

Debt

Total capex is estimated £463.23 million (\$601.8 million) and the project value comes in at £430 million arranged with a gearing of 67:33, with a senior debt package of £315 million and an equity contribution of £129 million. It reached financial close on 22 March (2019).

The debt was arranged by Crédit Agricole, Banco Sabadell, Investec, NatWest (formerly RBS), Natixis, and Siemens Bank.

The senior loan has a legal maturity of 19 years and six months (maturing in

September 2038) with the debt pricing over the three-year construction phase at 250bp above Libor, stepping up to 300bp once operational. There are a number of cash sweeps post-construction.

Efforts to raise debt were first launched in early 2017. Details on the initial debt then started to emerge in July 2017 with sources saying that pricing would come in at 300-400bp over an 18-year tenor with financial close imminent. However, the project struggled to negotiate environmental permits with the UK government's Environment Agency which was conducting public consultations with Bedfordshire residents.

Approval was granted on 26 January 2018 enabling the project to proceed. However, the decision was appealed in November 2018 by lobby group Bedfordshire Against Covanta Incinerator (BACI), but this was rejected in a judicial review, allowing it to progress in late 2018.

The advisory team included Macquarie Capital (financial), Hogan Lovells (sponsors' legal), Ashurst (lenders' legal), Ardent (sponsors' technical), Mott MacDonald (lenders' technical) and Fichtner (engineering consultant).

Equity

The project ownership is led by the developer and the Macquarie-owned renewable investment arm, with the key technology provider taking a minority position. The team is structured: Covanta (40%; £51.6 million); GIG (40%; £51.6

million); and Veolia (20%; £25.8 million).

The partners brought in three lenders to arrange a project-level, equity bridge loan to defer funding requirements until commercial operation. The equity bridge financing equates £129 million which will be retired with equity once commercial operations start in 2022.

The equity bridge loan was provided by Barclays, Natixis and NatWest.

GIG joined forces with Covanta in December 2017 when it agreed to develop up to six energy-from-waste (EfW) projects with the sponsor in the UK and Ireland, with Rookery being one of these.

GIG then paid £34 million to Covanta at Rookery's financial close to cover procurement costs incurred by the developer including a premium, in addition to a further premium for the right to invest in the project.

The project

The project was originally brought to market by Covanta alone and was approved in 2013 under a development consent order (DCO) for the delivery of nationally-important infrastructure in the UK. The DCO was valid for five years from the date of issue, meaning construction had to start by 25 March 2018. The equity bridge loan was put in place to start construction before the deadline.

Veolia joined the consortium for Rookery in 2016 and the project was re-launched with plans put in place to achieve final approvals. ■

Timeline



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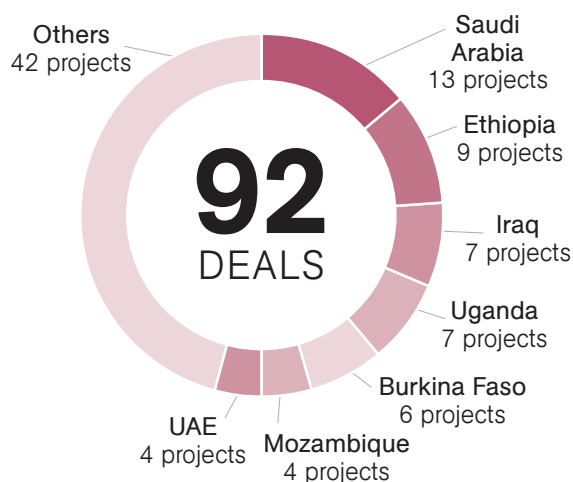
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Middle East & Africa

INSIDE

A place in the sun for African renewables
Sitra refinery expansion, Bahrain

Pipeline & procurement deals



Closed deal values by sector

Oil & Gas: \$6.17 billion

Power: \$1.40 billion

Mining: \$1.39 billion

Water: \$823 million

Renewables: \$150 million

Projects with recent tender updates

Al-Dibdibah Solar PV Plant

Kampala-Jinja Expressway

Qurayyat Solar PV Plant Phase I

Alfaisaliah Solar PV Plant

Rotan Power CCGT Power Plant

Mineral Line Railway

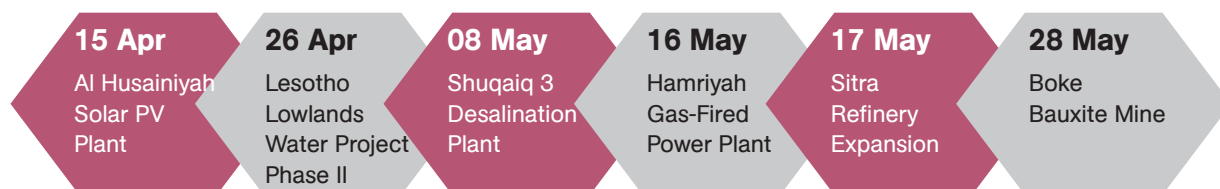
Benga Coal-Fired Power Plant

Arcadia Lithium Mine

Closed deals by country

Bahrain	\$5.96 billion	2
UAE	\$1.40 billion	1
Guinea	\$1.39 billion	1
Saudi Arabia	\$600 million	1
Lesotho	\$223 million	1
Egypt	\$215 million	1
Jordan	\$74 million	1
Central African Republic	\$45 million	1
Morocco	\$21 million	1
Burkina Faso	\$10 million	1

Transactions that reached financial close



Source: IJGlobal, from 1 April 2019 to 31 May 2019

DATA ANALYSIS: A growing interest in African renewables sees continued support from DFIs and foreign governments. By Miroslav Hadzhiyski.

A place in the sun

The governments of Zambia and Burkina Faso in April awarded a combined 275MW of renewable energy capacity to private sector firms. A mix of local and international developers will build six solar projects in each of the countries.

Zambia awarded its 120MW of solar PVs under the country's first round of GET FiT programme, a KfW-led initiative for which the German government has already committed nearly \$35 million. Burkina Faso's procurement programme similarly consists of small-to-medium IPP projects that benefit from long-term power offtake agreements.

However, despite recent interest in clean energy generation projects, Zambia and Burkina Faso still have a lot of catching up to do before they reach the pipeline capacity of the major renewables players in Africa.

IJGlobal data shows that South Africa has the biggest renewable energy potential, as well as the largest share of operational assets, followed by Kenya and Nigeria.

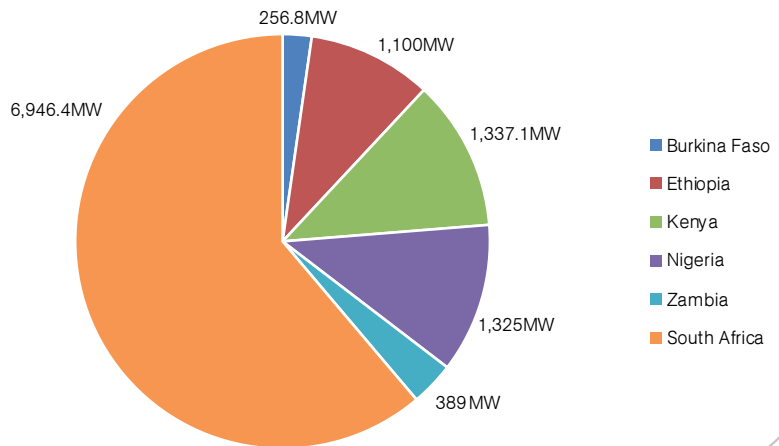
Financing

Commercial lending for renewables in South Africa accounts for more than \$5 billion, mainly coming from local lenders, though this the exception rather than the norm in the region.

South Africa's strong local financial sector, generally more developed economy and the possibility for an offtake agreement with state power utility Eskom make projects more attractive to private investors. In spite of its recent troubles, Eskom is still considered a bankable power sector counterparty.

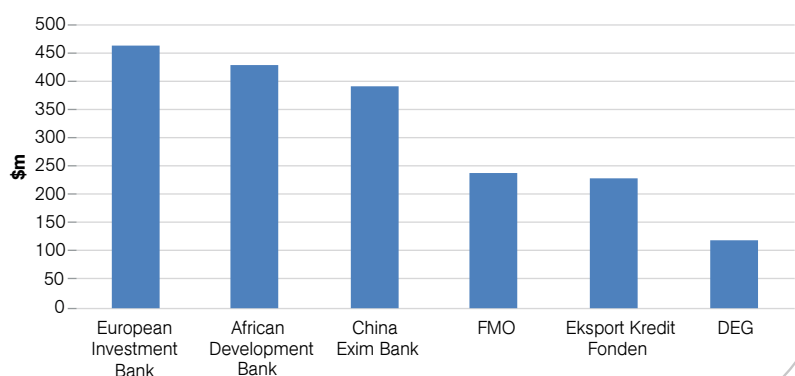
Meanwhile, development loans and government funding provide the bulk of financial support for most African

Renewable energy capacity in Africa



Source: *IJGlobal*

Major DFI/ECA lenders in Sub-Saharan Africa



Source: *IJGlobal*

renewable energy projects. According to *IJGlobal* data, lending by government institutions for renewables projects across Sub-Saharan Africa (excluding South Africa) accounts for more than \$3 billion, while the participation of commercial banks account for merely \$863 million.

It is no surprise that the major lending public institutions include the EIB, AfDB and China Exim Bank as the African states have relied heavily on government investments from Europe and China for

years, as part of various development programmes.

Sub-Saharan African renewables will, for the time being, continue to rely on governments and DFIs. Both the Paris Agreement on Climate Change and Addis Ababa Sustainable Development Goals Agreement from 2015 advocate deeper economic cooperation and action against climate change, and will keep capital flowing from government entities to projects. ■

DEAL ANALYSIS: BAPCO enlisted a group of ECAs and regional lenders to finally bring this deal over the line after nine years in the making. By James Hebert.

Sitra refinery expansion

Bahrain Petroleum Company's (BAPCO) Sitra refinery expansion drew together five ECAs over seven tranches that yet could have been much bigger had it not been for the late – but great – contributions by local lenders in the financing.

In mid-2018, a club of 11 regional and local banks answered BAPCO's call, reducing an expected ECA tranche of around \$3 billion by one-third.

The relatively low debt pricing of the ECA-covered tranches was therefore considered by the sponsor to be less economic than an uncovered Islamic bank tranche that contributed just over half a billion towards the \$4.064 debt package.

The progress towards financing between April 2018 and March this year also brought the Sitra expansion project to a critical stage after eight years of development, with construction works having kicked off before the end of Q1 2019.

Refining ambitions

The government of Bahrain announced the BAPCO Modernisation Programme (BMP) in September 2010. The plan to expand the country's operational downstream capacity by as much as 600,000 bpd, is centred on Bahrain's sole refinery in Sitra.

Located 10km south of Manama, up to 90% of BAPCO's refined oil and gas products are generated at the site.

The 2014 crash in crude oil prices added to perennial delays in Sitra's development phase, as the overall aims

of the BMP continued to be debated in Bahrain – with the targeted expansion figure finally settling in 2018 at 360,000bpd. In the meantime, the cost of the project tumbled from an estimated peak of \$10 billion to the eventual \$6 billion capex when financial close was achieved on 16 May (2019).

Expansion work started in March and are set to be completed by 2022. TechnipFMC, Samsung Engineering, and Tecnicas Reunidas were awarded the \$4.2 billion EPC contracts that were first tendered in June 2015.

Regional banks signed up to a 16-year, \$530 million Islamic tranche

Financing

The sponsor achieved a debt-to-equity ratio of 68:32, closing on a \$4.064 billion debt package to finally take the project over the finish line after nine years in the making. BAPCO put up the remaining \$1.936 billion in equity.

BAPCO enlisted five ECAs to cover just over \$2 billion debt carrying a tenor of 12.5 years. The ECAs were CESCE (\$650 million), SACE (\$650 millions), UKEF (\$400 million), K-SURE (\$367 million) and KEXIM (\$110 million).

The debt pricing features a tight range from as high as 150bp above Libor to as low as 90bp. The final portion of

debt covered by the ECAs ended up being roughly one-third smaller than expected.

KEXIM and UKEF also provided direct loans of \$257 million and \$100 million, respectively.

In April 2018, BAPCO sounded out additional banks and had attracted a strong contingent of local and regional banks by the 20 July deadline.

A club of banks primarily from Bahrain and Saudi Arabia signed up to a \$530 million Islamic tranche with a 16-year tenor. These banks were Ahli United Bank, Bank ABC, Bank of Bahrain and Kuwait (BBK), Banque Saudi Fransi, Bahrain Islamic Bank, Gulf International Bank, Kuwait Finance House, Mashreq Bank, National Bank of Bahrain, National Commercial Bank, and Riyadh Bank.

Finally, rounding out the debt package is a \$1 billion uncovered commercial bank tranche with a 16-year tenor and pricing at 300bp above Libor, which featured: BNP Paribas; Credit Agricole; Credit Suisse; HSBC; Natixis; Santander; Société Générale; and Standard Chartered.

Advisers

BNP Paribas and HSBC served as co-mandated lead arrangers as well as financial advisers to BAPCO.

Other advisers to the sponsor includes Shearman & Sterling and Linklaters (legal) and Nexant (technical).

Allen & Overy acted as legal adviser to the lenders. ■

Timeline



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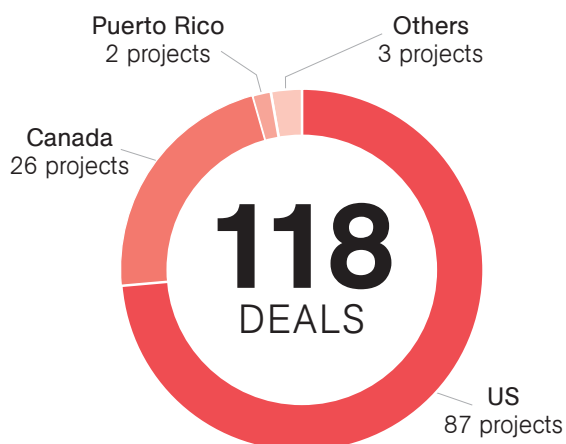
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North America

INSIDE

Ottawa's ESAP P3, Canada
Stamp of approval for US oil & gas

Pipeline & procurement deals



Projects with recent tender updates

Trumbull Energy Center
GO Rail Expansion
Acquisition of Calpine's Power Plant Portfolio
Newfoundland and Labrador Care Homes
Sale of Engie's US Contracted Biomass Portfolio
Florida State University Student Housing
Three Rivers Energy Center
North Sydney Healthcare Center

Closed deal values by sector

Oil & Gas: \$5.84 billion
Transport: \$2.83 billion
Renewables: \$2.52 billion
Power: \$2.26 billion
Social & defence: \$335 million

Closed deals by country

Country	Value	Count
US	\$12.47 billion	42
Canada	\$3.051 billion	9
Canada, US	\$50 million	2

Transactions that reached financial close



Source: IJGlobal, from 1 April 2019 to 31 May 2019

DEAL ANALYSIS: This district heating and cooling deal features a first for the Canadian PPP market. By Ila Patel.

Ottawa's ESAP P3, Canada

Ottawa's project to modernise, maintain and operate the district energy system that heats 80 buildings and cools 67 buildings – including parliament buildings – in Canada's capital region reached financial close on 29 May.

The government of Canada placed restrictions on the use of long-term private capital which required the winning consortium, Innovate Energy led by PCL Investments, to structure the project in a way not done before in the Canadian PPP market.

The project – part of the government's Energy Services Acquisition Program (ESAP) – was structured as a DBF(OM) so that the O&M obligations continue after construction completion, which is typically not the case when there is no long-term capital.

Signature elements of the project include: making the existing heating system safer consume less energy by converting it from steam to low temperature hot water; building and decommissioning plants; upgrading existing facilities in Ottawa and Gatineau, including the Cliff plant near the parliament; and switching from steam to electric chillers.

The central heating and cooling plants (CHCPs) were designed and built between 1916 to 1971 so many of the assets are nearing the end of their useful life. This has meant that major capital investment is required in order to ensure the reliability and efficiency of the heating

and cooling operations of the energy service modernisation (ESM).

Procurement

An RFQ for the ESM project was published in August 2017, with two teams pre-qualified in February 2018 and an RFP issued thereafter. The two teams were Innovate Energy and Rideau Energy Partners.

The project was structured as a DBF(OM) so that the O&M obligations continue after construction completion

Innovate Energy brought together PCL Investments Canada, ENGIE, Black & McDonald Capital, Black & McDonald, PCL Constructors Canada, and WSP Canada.

Rideau Energy Partners comprised NRG DG Development, Pomerleau, SNC-Lavalin Capital, SNC-Lavalin Construction (Ontario), and Altus Group.

Innovate Energy was selected as preferred bidder for the 35-year

concession in March (2019). While financial close took place on 29 May, funding occurred on 31 May.

Construction will take place from 2019 to 2025 and once complete, Innovate Energy will operate and maintain the new system through to 2055.

Financing

The financing comprised an all-bank revolver with six banks providing C\$500 million (\$349.3 million) in debt. They were ATB Financial, Bank of Nova Scotia, Desjardins, HSBC, SMBC, and TD Bank.

The banks provided two interim payments and a substantial completion payment. There is nominal equity of C\$100 million given there is no long-term debt.

Meanwhile, equity was provided by: PCL Investments Canada (C\$45 million); ENGIE (C\$45 million); and Black & McDonald Capital (C\$10 million).

Advisers

The lenders' advisers were Faskens (legal), BTY (technical), Marsh (insurance), BNS (agent), and AST Canada (trustee).

The consortium was advised by Davies (legal), TD Securities (financial), and Mazars (model auditor).

The government was advised on the procurement by PwC (financial), EY (independent oversight), Norton Rose Fulbright (legal), Stantec (technical and design), and Knowles Consultancy (fairness monitor). ■

Timeline



DATA ANALYSIS: President Trump's recent executive orders could help some major midstream and LNG projects get back on track. By Yavor Guerdjikov.

Stamp of approval

Earlier this year, US president Donald Trump signed two executive orders (EO) to streamline federal processes concerning the development of LNG and midstream infrastructure.

The first EO calls for updated regulations from the Department of Transportation in regards to modern LNG development, while also addressing regulatory and permitting hurdles for the financing of new facilities. The second EO states that decisions to issue or deny permits for certain cross-border projects will be made solely by the president, which may result in a faster permitting process.

Midstream

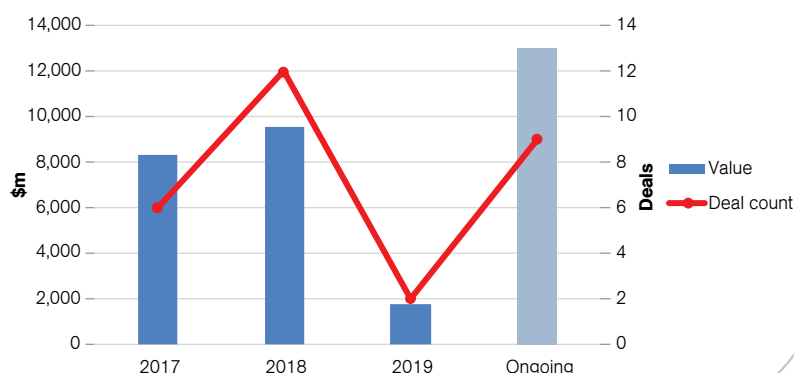
Investments in US midstream infrastructure has grown since 2017, following the surge of new oil and gas supply from upstream operations.

IJGlobal data shows that roughly \$8.3 billion and \$9.5 billion of project finance deals closed in 2017 and 2018, respectively. And the US boasts an impressive pipeline of projects, despite available capacity starting to exceed demand – transactions worth some \$13 billion in the financing/pre-financing stages.

The \$8 billion Keystone XL pipeline, brought back in 2017 after being cancelled by Barack Obama. The project recently received a new presidential permit, but due to court delays, the 1,900km cross-border facility has been pushed back to 2020.

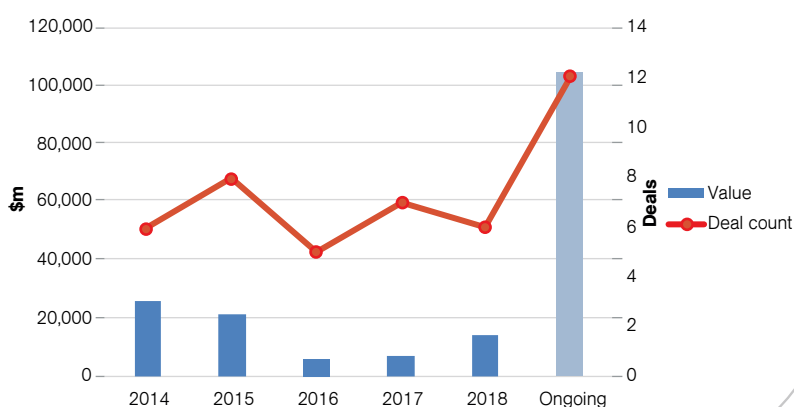
Other large projects to have stalled are the 965.6km, \$5 billion Atlantic Coast Pipeline between West Virginia and North Carolina; and the \$3.2 billion Access Northeast Pipeline, which comprises the expansion of the Algonquin system in New England.

US midstream PF investments 2017-2019 YTD



Source: IJGlobal

US LNG project finance investments 2014-2019 YTD



Source: IJGlobal

LNG

The LNG industry in the US is seeing a resurgence following the first big push for project financing in 2014-15. According to IJGlobal data, around \$104 billion of projects are waiting to reach financial close.

Project developers, however, are facing a major hurdle: these projects require tremendous amounts of financing, and have to stick to tight deadlines if they want to take advantage of the market situation. But some developers have managed to push

ahead with their projects.

Tellurian's massive \$27 billion Driftwood LNG export facility and associated pipelines are awaiting a final investment decision in H2 2019. The facility will have an initial 16.6 mtpa export capacity with the possibility for further expansion to 27 mtpa.

Energy Transfer Partners' estimated \$10.9 billion Lake Charles LNG export facility has lined up JP Morgan to raise project debt. Construction, however, is expected no sooner than 2020. ■



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Latin America

INSIDE

Vías Chile bond issuance
Ecuadorian PPPs - some progress
Brazilian LNG-to-power and GNA I

Pipeline & procurement deals



Projects with recent tender updates

Sale of 50% in Engie's Mexico Renewables Portfolio

Bogota Metro Line 1

Cabo Leones III Wind Farm

Maya Railway

La Lucha Solar PV Plant

Sao Sebastiao Port Privatisation

Porto do Acu III CCGT Power Plant

Valparaiso-Santiago High-Speed Rail

Closed deal values by sector

Mining: \$5.30 billion

Transport: \$2.39 billion

Renewables: \$320 million

Water: \$306 million

Power: \$102 million

Social & defence: \$12 million

Closed deals by country

Chile	\$6.29 billion	7
Colombia	\$900 million	2
Uruguay	\$500 million	1
Brazil	\$421 million	6
Argentina	\$234 million	1
Costa Rica	\$50 million	1
Peru	\$36 million	2

Transactions that reached financial close

08 Apr

Sale of 49%
in Sacyr
Concesiones

10 Apr

Autopista
al Mar 2

03 May

Ferrocarril
Central
Railway

20 May

Belo
Horizonte
Street
Lighting

23 May

Quebrada
Blanca
Copper Mine
Phase 2

30 May

Acquisition of
Litoral Sul
Transmission
Line

Source: IJGlobal, from 1 April 2019 to 31 May 2019

DEAL ANALYSIS: High liquidity and low interest rates in the Chilean market saw the largest bond issuance for over a decade. By Juliana Ennes.

Vías Chile bonds

At the end of May, Vías Chile refinanced a loan through the issuance of a bond on the Santiago Stock Exchange, pointing to a trend in the Chilean capital markets going forward.

H2 2019 will likely see companies from different sectors issuing bonds to refinance debt, taking advantage of high liquidity and a very competitive market that is driving interest rates down and improving their long-term credit profile.

Chile is an attractive investment destination for international institutional investors interested in Latin America. The country has a stable economy with dollarized projects, is investment grade and is part of OECD.

However, it is a relatively small country, coming in 41st on IMF's GDP ranking. The downside is that there is a great deal of liquidity, but a shortage of projects to absorb investment.

As a consequence, interest rates have dropped and investors are taking advantage. Sources say that there are already several companies filing for listing on the stock exchange, a requirement to issue public bonds in Chile.

The financing

Vías Chile's transaction, which closed on 29 May, was 2.5x oversubscribed, raising around \$550 million in local currency. The bonds were issued in unidades de fomento (UF), a unit of account used in Chile, which is adjusted by inflation.

This is the largest bond issuance in Chile in the last 15 years. The head of project finance at Scotiabank Chile, Andres Onetto, added that it is the largest unsecured infrastructure bond ever placed in Chile.

"The success in structuring this transaction is a reflection of the amazing work done by Scotiabank Chile's project

finance and DCM teams, together with the DCM team of Santander," said Onetto.

The company issued two tranches. Tranche 1 consists of series B bonds totalling four million UFs, while tranche 2 comprises series A bonds totalling 10 million UFs.

The series B bonds have a 6.5-year tenor, at an interest rate of 1.9%, according to data from the stock exchange. The series A bonds have an 11.5-year tenor, with an interest rate of 2.3%.

The issued bonds will repay debt of around €500 million (\$558 million) from the holding company that was due to expire. The loan financed the acquisition of a 50% stake in Chilean road Autopistas Central, in 2016. With the acquisition, Vías Chile took full control of the asset.

Vías Chile is owned by Albertis (80%) and Infinity Investments (20%).

Scotiabank Chile was the structuring bank, financial adviser and placement agent on the transaction. Santander also acted as placement agent and financial adviser, while Barros y Errazuriz acted as legal adviser.

A source close to the deal said that the placement of bonds in local currency attracted local investors – which included Chilean mutual funds and pension funds. The shorter tenor of the bonds than the market average allowed better interest rate conditions and attracted mutual funds to the transaction. Meanwhile, the longer tranche attracted insurance companies.

IJGlobal had exclusive access to the sales prospectus, which states that the bonds had a covenant restriction in which Vías Chile's participation in Autopista Central cannot be lower than 75%, its participation in Autopista Los Andes lower than 100%, and its participation in all other concessions have to be at least 50%.

The company has six road concessions in Chile. They are Autopista Central, Autopista los Andes, Autopista Los Libertadores, Rutas del Pacifico, Autopista del Sol and Rutas del Elqui.

Roads concessions

The bonds issuance came only a few days after Chilean president Sebastián Piñera launched the country's road infrastructure plan, which will require investments of more than \$7 billion in tenders and re-auctioning.

However, during the announcement, Piñera spooked investors in the country's road sector, asking concessionaires to reduce the value of tolls re-adjustments – which directly affects the profitability of concessionaires.

The president urged the minister of public works to reach an agreement with concessionaires "in such a way as to give relief to the pockets of our compatriots."

A person close to the transaction said that the bond issuance may have been put in jeopardy by the president's statements. "We were not sure how investors would react to the possibility of having lower toll rates. However, the demand for the bonds was much higher than the offer, which was proof of the appetite of investors."

Vías Chile has six road concessions in Chile: Autopista Central, the largest urban highway awarded to the private sector to date; Autopista de los Andes, which crossing the country from east to west; Autopista de los Libertadores linking Santiago to the Bioceánico Cristo Redentor corridor; Rutas del Pacifico, also known as Ruta 68, connecting Santiago to the Valparaíso area; Autopista del Sol, which links Santiago, Talagante, Melipilla and San Antonio; and Rutas del Elqui, in the fourth region of Coquimbo. ■

DATA ANALYSIS: Ecuador is working hard to attract private investment into new infrastructure projects. By Sophia Radeva.

Ecuadorian PPPs

Latin America is increasingly looking at the PPP model as a way of facilitating private investment in new infrastructure. Ecuador is no exception to this trend.

The Ecuadorian economy has been getting weaker in recent years. The IMF forecasts the country's GDP to contract by 0.5% this year and to expand by just 0.2% in 2020.

With this fiscal backdrop it is little wonder why the Ecuadorian government is eager to turn to the private sector for infrastructure funding, and attempt to catch up with the likes of Chile and Colombia.

Systematic legislative changes, the first set of which were passed at the end of 2015, started to gradually ease the way for private infrastructure investors.

In a move to strengthen the country's credibility and image as a business-friendly jurisdiction, Ecuador passed a Law on Incentives for Public-Private Partnerships and Foreign Investment in December 2015.

In just one year, these measures led to a spur in PPP activity in the country. In 2016, two PPP agreements signed in the ports sector: Puerto Bolivar Port Terminal Stage 1 and Posorja Port.

In June 2018, President Lenín Moreno passed a bill to exempt the business community from paying income tax for an eight-year period when investing in Guayaquil and Quito, and 10 years when investing in the rest of the country.

These moves prompted further success. Financial close on the \$100 million Guayaquil Channel Access and \$540 million Posorja Port PPPs occurred in 2018, and the \$400 million Quito International Airport Expansion followed in early 2019.

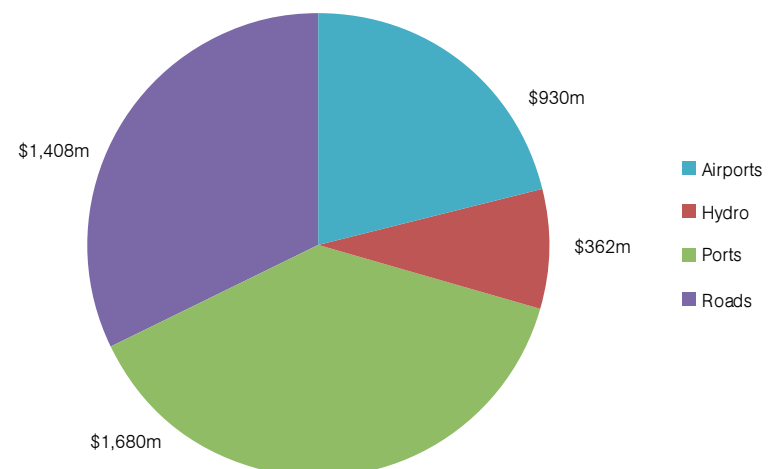
IJGlobal data shows that ports and

Ecuadorian closed PPPs (cumulative)



Source: IJGlobal

Ecuadorian closed PPPs by sector



Source: IJGlobal

roads have been prioritised. This comes as no surprise, with transport links being the backbone of any economy.

According to a statement earlier this year by Ecuador's public works minister, Aurelio Hidalgo, around 30% of the country's road network will have private participation in the form of a PPP by 2021 with an investment estimated at \$2 billion.

Quito is also looking to build on the

reforms passed last year, paving the way for new PPP developments expected to exceed \$3 billion in value.

This comes in the form of four freshly launched projects: Santo Domingo-Buena Fe-Babahoyo-Juan Road; Guayaquil Southern Viaduct Road; Santo Domingo-Quevedo Road Expansion; and Quevedo-Babahoyo-Juan Road Expansion. ■

NEWS ANALYSIS: A look at Brazil's power market reveals a surge in LNG-to-power projects. By Juliana Ennes.

LNG-to-power and GNA I

An SPV set up by Prumo Logistics, BP and Siemens reached at the end of March financial close on the development, construction and operation of an integrated LNG-to-power project located in the Rio de Janeiro state.

UTE GNA I Geração de Energia (commonly called GNA I) was created to implement the thermal power complex in the Porto do Açu region.

Brazil has historically been seen as an attractive destination by international investors, but has faced three main obstacles: most projects are contracted in local currency; BNDES' looming presence as main competitor to commercial banks; and Brazil not being investment grade or part of the OECD.

The sponsors found a way to involve international investors, however, while still financing the project in Brazilian reais. Lenders were BNDES and IFC, but the BNDES loan was guaranteed by KfW IPEX-Bank with support from Germany's Euler Hermes.

The financing

The project's total costs are estimated at around \$1.2 billion, with the GNA I financing package including a \$288 million 15-year loan from IFC and a R1.76 billion (\$475 million) loan provided by BNDES.

Although IFC's loan agreements are denominated in dollars, the client will receive the amount in Brazilian reais, with the exchange rate from the date of disbursement.

Traditionally, ECAs are not allowed to cover development banks loans. In this case, KfW backed the financing from BNDES, and was in turn supported by Euler Hermes. Euler Hermes covered 95% of the risk, while KfW acted as an intermediary, covering the remaining 5%

and structuring the guarantee scheme.

The guarantee is in relation to a contract with Siemens, which will provide its H-class gas turbines for the gas-fired plant. Siemens has also secured a contract for the turnkey construction of the power plant, in a consortium with Brazilian construction company Andrade Gutierrez. It will also provide long-term O&M services for the asset.

Lakeshore Partners acted as financial adviser on the deal, while legal advisers included Pinheiro Neto, Milbank and Souza Melo Torres.

The project

Ownership of the SPV is split: Gas Natural Açu (67%); and Siemens Energy and Siemens Financial Services (33%).

Gas Natural Açu (GNA) is in turn owned by Prumo Logistics (70%) and BP Global Investments (30%).

The GNA I project comprises an integrated 1.3GW CCGT power plant, an LNG import marine terminal, a transmission line, and the expansion of an existing substation. The facility is expected to start commercial operation in 2021.

The plant will be linked to Brazil's electrical grid, and capacity and energy will be sold under regulated PPAs with 36 distribution companies. The PPAs were originally awarded to Bolognesi Group, before being fully transferred to GNA in late 2017.

The project is part of the largest LNG-to-power complex in Latin America. The complex in the São João da Barra municipality is owned by Porto do Açu Operações, a company 98.8% owned by Prumo.

The SPV plans include the construction of a second gas-fired power plant, which would take the project to a

total installed capacity of 3GW.

LNG-to-power in Brazil

The Brazilian oil and gas sector has suffered in recent years, with low international oil prices as a result of the corruption and political crisis involving Petrobras. However, the country has massive reserves yet to be developed.

Facing relatively high electricity prices, high dependency on hydropower, and huge quantities of gas, Brazil has seen a boom in LNG-to-power projects.

There are at least eight projects currently under development or planning in the country. While GNA I is considered one project, it encompasses nearly four different plants.

Specialists in the country say that the prohibition of burning flared gas in Brazil, when producing oil, and low gas prices internationally, will encourage oil and gas companies to bid as sponsors on LNG-to-power projects. Their involvement will be to provide cheap gas to the power plants.

Looking ahead

Some of the LNG-to-power projects currently under study in Brazil are in competition even though they are in different locations, all because they will connect to the national grid.

Some argue that there is no space for so many thermal power plants, which will drive fierce competition in the next power auctions to be held by the ministry of mines and energy. Without securing PPAs, the fear is that most of these projects are unlikely to become a reality.

GNA currently has an advantage over competitors to develop the second, third and fourth phases of the project. With all located in the same space, scale might play a greater role in the projects' competitiveness. ■

Asia Pacific

INSIDE

Ravenhall Prison PPP refinancing, Australia

Thailand's bright new energy strategy

Pipeline & procurement deals



Projects with recent tender updates

Dhaka and Western Zone Transmission Line
 Acquisition of 49% in Mumbai Airports
 CopperString Transmission Line
 Star of the South Offshore Wind Farm
 Greater Changhua 1&2a Offshore Wind Farms
 Acquisition of 51% in IL&FS Indian Wind Portfolio
 Van Phong 1 Coal-Fired Power Plant
 Bangkok-Rayong High-Speed Railway

Closed deal values by sector

Social & defence: \$4.21 billion

Power: \$3.14 billion

Oil & Gas: \$581 million

Telecoms: \$369 million

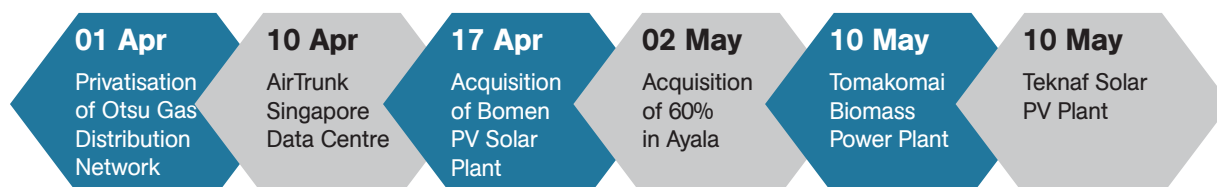
Renewables: \$332 million

Transport: \$300 million

Countries with highest closed deal values

China, Hong Kong	\$3.82 billion	1
Australia	\$2.29 billion	4
India	\$1.52 billion	4
Philippines	\$579 million	1
Singapore	\$419 million	2
Japan	\$338 million	3
Bangladesh	\$25 million	1

Transactions that reached financial close



Source: IJGlobal, from 1 April 2019 to 31 May 2019

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DEAL ANALYSIS: This US private placement refinancing of this Victorian prison achieved a record tenor for an Australian PPP. By Alexandra Dockrey.

Ravenhall Prison PPP refi

Australian PPP sponsors are increasingly opting for long-term solutions rather than refreshing mini-perm loans and retaining interest and refinancing risk. A handful of transactions in the last 12-18 months have targeted the US private placement market or floating rate loans syndicated to Japanese institutions.

According to financial adviser Tetris Capital, the refinancing of the Ravenhall Prison PPP in Victoria is the “first rated, full-tenor US private placement financing for a PPP with custodial services”, as well as having the longest tenor yet for a US private placement financing of an Australian PPP.

USPP

The owner of the availability-based project is Florida-based GEO Group. GEO has invested A\$90 million (\$62 million) of equity into the project company, GEO Ravenhall Pty Ltd.

Ravenhall Finance Co Pty Ltd issued roughly A\$461.56 million of non-recourse, senior secured notes on 22 May. The amortising notes have a fixed coupon and yield to maturity of 4.23%.

The notes priced on 23 April and funded on 21 May. They are issued in Australian dollars, with no swaps at the project company level. Investors took out their own swaps if required.

Final maturity is on 31 March 2042, implying a tenor of around 22 years and 10 months. The duration of the concession term also ends in 2042 – 25 years after the 31

October 2017 commercial acceptance date.

There was a confidential rating from Standard & Poor's of A-.

Investors in the notes were MetLife (for more than half), Guardian Life Insurance and Canada Life.

The debt-to-equity ratio now is 84:16.

Seeking long tenor

Australian banks continue to favour a five- to seven-year mini-perm structure with no desire to push out their tenors. A PF banking advisory source told *IJGlobal* that they would expect domestic banks to finance a five-year mini-perm at a price in the low-100s (bp over BBSY) for a straightforward social infrastructure PPP refi – a compellingly cheap option but without the certainty that comes with a longer tenor.

Tetris Capital had investigated a range of financing products, including local/international bank debt, superannuation funds and insurance company investors, before settling on the US private placement route to market.

While loans syndicated in Japan have proved a viable alternative to achieve long-term debt to refinance Australian PPPs and other infrastructure, a US private placement offered a longer lender to sponsor GEO with Ravenhall Prison now financed to term. The longest “samurai loan” so far has been 15 years.

Another key difference is that US private placement are fixed rate, while the “samurai loan” is floating rate. But given this difference, an advantage of the

Japanese option is that if interest rates drop and a refi becomes desirable, it is pre-payable without the large make-whole premium for refinancing a bond early.

A full-service prison PPP

The procuring authority under the concession agreement has a right to a 50% share in the interest rate saving achieved through the refi.

GEO signed the concession in September 2014, beating Secure Pathways, a consortium of Macquarie, John Laing, Serco Australia and Baulderstone.

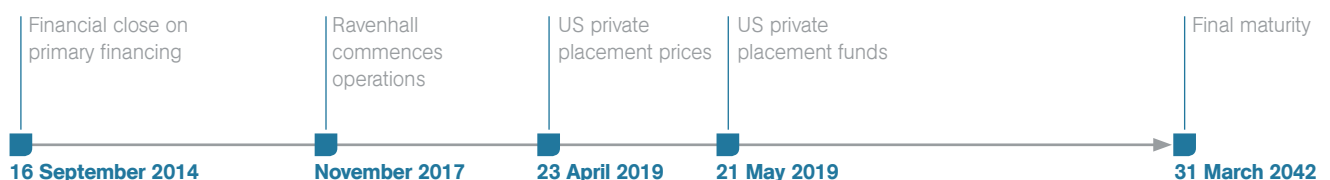
The state government of Victoria procured Ravenhall Prison under the Partnerships Victoria framework. It selected a “full-service” PPP model, including design, construction, hard facilities management, lifecycle responsibility, support services and custodial services.

Advisers

The advisers on the refi were: Tetris Capital (borrower's financial); Barclays (lead placement agent); Allens (borrower's legal); Sidley Austin (borrower's legal); Shearman & Sterling (lenders' legal); Gilbert + Tobin (lenders' Australian legal); Deloitte (tax); Willis Towers Watson (insurance); Aqunta (lenders' technical due diligence); Clayton Utz (Victorian government's legal) and EY (Victorian government's financial).

Capella Capital was GEO's financial adviser before senior staff from that company left to form Tetris Capital in 2016. ■

Timeline



DATA ANALYSIS: Thailand floats a brand-new energy strategy. By Lyudmila Zlateva, Valentin Mihaylove & David Doré.

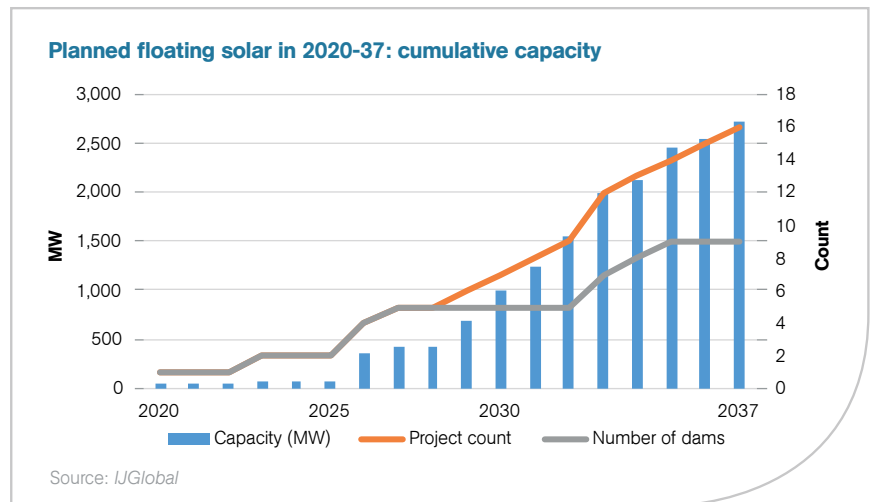
Bright new idea

Thailand's National Energy Policy Council (NEPC) approved at the beginning of the year a highly anticipated update to its power development plan (PDP) to 2037, following months of back and forth with critics.

Its headline goal is to diversify Thailand's largely natural gas-and-import-dependent energy sector. The new plan aims to not only increase the nation's installed capacity by almost 70% to 77.2GW compared to 2017, but also to attract foreign investments in domestic generation to help ease the burden on state-run EGAT.

Solar projects, especially floating ones, have been announced as the glossy highlight of the development plan which will still rely mainly on gas-fired assets. The new PDP foresees an energy mix mainly divided between natural gas (53%) and hydro and renewables (combined 35%), with coal making up the rest (12%).

IJGlobal data shows that gas-fired plants have been a major source of energy for Thailand, and while new operational solar PV projects outnumber gas-fired



ones, gas prevails in terms of capacity.

Floating solar

For Thailand, running floating solar flagship projects under its renewables umbrella alongside gas and hydro might be the winning formula for attracting foreign investment and contractors. The anticipated 2020 commissioning of the floating solar project at Sirindhorn Dam – expected to be the world's largest hydro floating solar farm when it comes online –

will test that hypothesis.

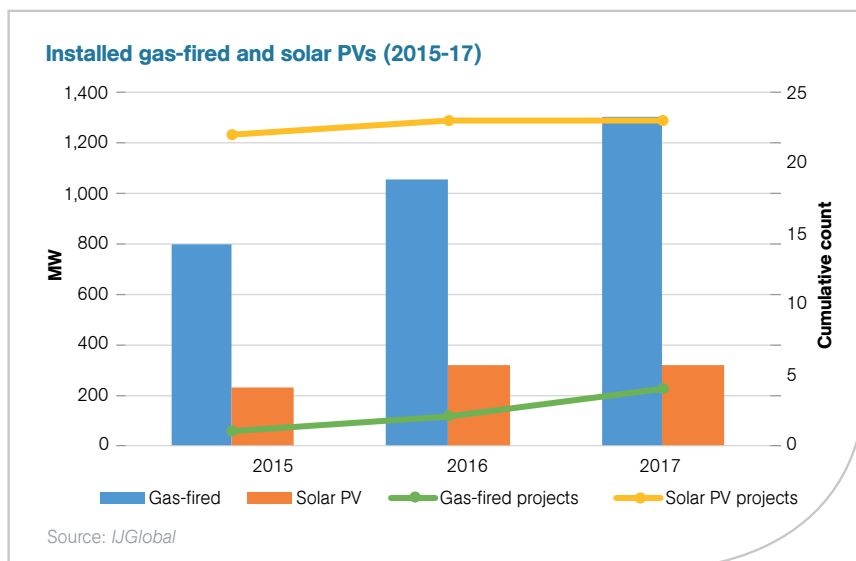
The government has announced the development of floating solar parks, alongside ground-mounted and rooftop projects to plug the gaps in its power generation capacity.

The country has outlined plans for over 2.7GW of floating solar projects across 16 projects in nine dams to be tendered via competitive bidding. The target commercial dates of operations (COD) stretch to 2037.

While environmental impact assessments have yet to be carried out, IJGlobal data highlights four phases of the cumulative capacity of floating solar PV based on year-on-year growth: test and tweak (2020-25); refinement (2026-28); growth (2029-33); and taper and re-evaluation (2034-37).

The plan has noticeable year-on-year increases to the cumulative capacity in 2023 (53%), 2026 (432%) and 2029 (67%). The growth rate decelerates afterwards.

The fact that more than one project can be fit into a single dam, guaranteeing power production at times when hydro power plants are unable to operate, are advantages considered by NEPC. ■



Events Calendar

July 10-11th	IJCanada: Infrastructure	Whistler
September 10-11th	IJGlobal Live	Madrid
September 16-17th	IJNorth America	New York
November	IJBrazil	São Paulo
December	CARIF 2019	Bermuda
January 23-24th	IJCanada: Power	Toronto
March 16th	REFF LatAm - 2020	Miami
March 17-18th	IJLatAm - 2020	Miami

Note: World events calendar subject to change

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