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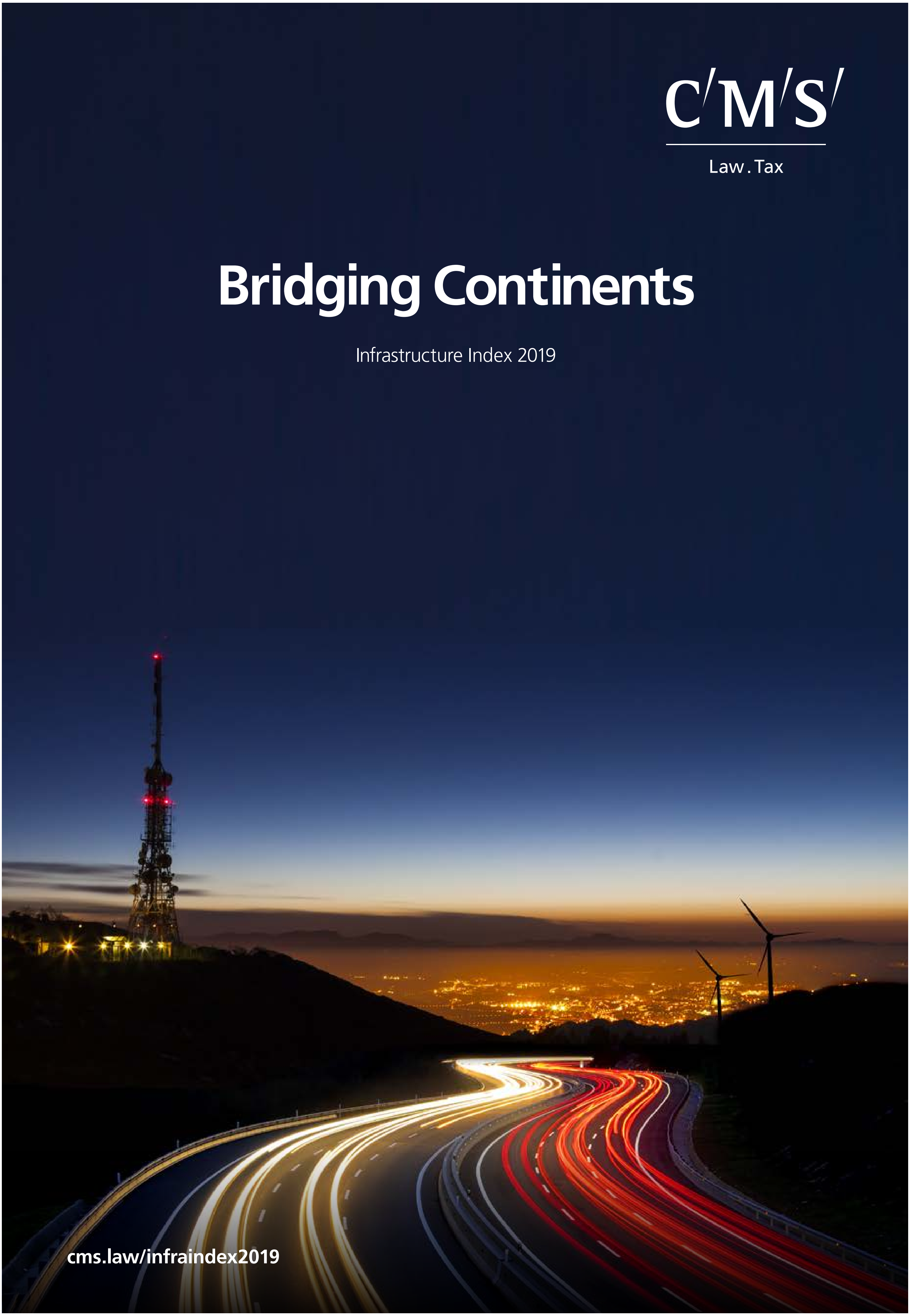


Bridging Continents

Infrastructure Index 2019

cms.law/infraindex2019

The top 10

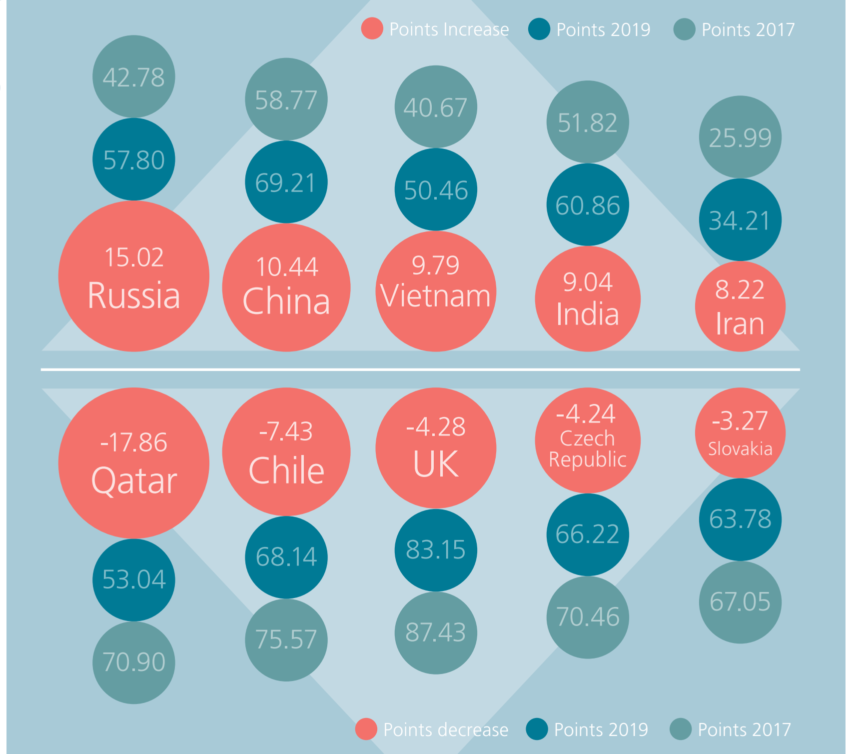
The CMS Infrastructure Index analyses data across 50 jurisdictions against six criteria to create a guide to the most attractive destinations for infrastructure investment.

Scores are out of 100.

Countries ranked 11 – 50

11	Austria	81.48	31	Russia	57.80
12	France	81.22	32	Peru	57.14
13	United Arab Emirates	79.18	33	Indonesia	55.76
14	Japan	76.93	34	Oman	55.74
15	Spain	74.40	35	Kuwait	55.59
16	South Korea	73.32	36	South Africa	55.29
17	Hong Kong	73.00	37	Kazakhstan	55.18
18	China	69.21	38	Turkey	54.73
19	Poland	69.18	39	Romania	54.49
20	Chile	68.14	40	Philippines	54.44
21	Saudi Arabia	67.76	41	Bulgaria	53.95
22	Italy	67.11	42	Qatar	53.04
23	Czech Republic	66.22	43	Morocco	51.92
24	Slovakia	63.78	44	Vietnam	50.46
25	Malaysia	63.33	45	Brazil	48.88
26	Colombia	62.50	46	Ukraine	44.94
27	Mexico	61.78	47	Cambodia	41.70
28	Hungary	61.67	48	Bangladesh	39.42
29	India	60.86	49	Algeria	35.56
30	Thailand	59.37	50	Iran	34.21

Countries with the biggest rise in index points



Countries with the biggest fall in index points

Contents

Bridging Continents

In Bridging Continents, the 2019 CMS Infrastructure Index, we see that infrastructure is connecting people worldwide at an unrelenting pace. With sustainability, innovation and digital transformation at the heart of government agendas, investors are finding new and exciting opportunities on a global scale, including 5G, subsidy-free renewables, smart cities and PPP in new markets.

This year's CMS Infrastructure Index ranks 50 countries in order of investment attractiveness. There are some big shifts since our 2017 Index and Germany has taken top spot. Germany's focus on sustainability and innovation is the driving force behind its position. The country is making climate action an essential part of the political agenda and supporting this through a number of offshore wind projects, the construction of a fourth electricity highway and an extensive EV charging programme.

The UK's story is not so positive. We see the UK fall from fourth in 2017 to ninth in 2019. The Brexit-effect. Without Brexit, the UK would rank fifth. There is a steady pipeline in some infrastructure sectors: for example, rolling stock renewals in England and transport in Scotland. There is also a shift from primary to secondary investments, with more opportunity for secondary market investors in rail, airports and energy. However, unsurprisingly, the political uncertainty has led to delays for flagship projects and a decrease in lending to UK projects.

Another country to note is China, which has risen over 10 points since the 2017 Index and is now in 18th position. 5G is instrumental in China's increased ranking due, in part, to major corporations such as Huawei and ZTE; over 10 million advance orders for 5G data plans were submitted to China's three mobile operators, and they will deploy a total of 130,000 stand-alone 5G base stations across the country by the end of 2019.

As the world focuses on climate change and sustainability, we see this transferring to the infrastructure sector too. Infrastructure assets play a vital role in climate change mitigation and environmental, social and governance (ESG) criteria are becoming a top priority for infrastructure investors and important to projects. However, the sector is facing a number of challenges, including an absence of consistent standards and, as a result, limited guidance on how to measure and report performance. Regulators globally are working to create their own frameworks in this area but, with many countries creating their own, international operators will face a complex matrix of requirements for their different assets around the world.

In this year's report, we see some very strong representation from the Americas. Latin America has some mega interconnectivity projects, presenting some exciting developments. Examples include a 3,500km submarine fibre optic network from the north to the south of Chile and the recently completed 10,000km subsea cable connecting California to Chile. On the other side of the continent, Brazil is working on the innovative 9,300km EllaLink subsea cable system bridging between the American (Brazil) and European continents (Portugal and Spain).

Overall, the infrastructure sector continues to present a positive picture in an uncertain world. Governments globally are investing heavily in infrastructure assets to stimulate their economies. At the same time, there is an abundant support of capital as investors look for long-term stable investments.

Thank you to our research partners inspiratia, and to our interviewees for giving up their valuable time to share their views. If you would like to discuss the report, or any of its themes, we would welcome a conversation.

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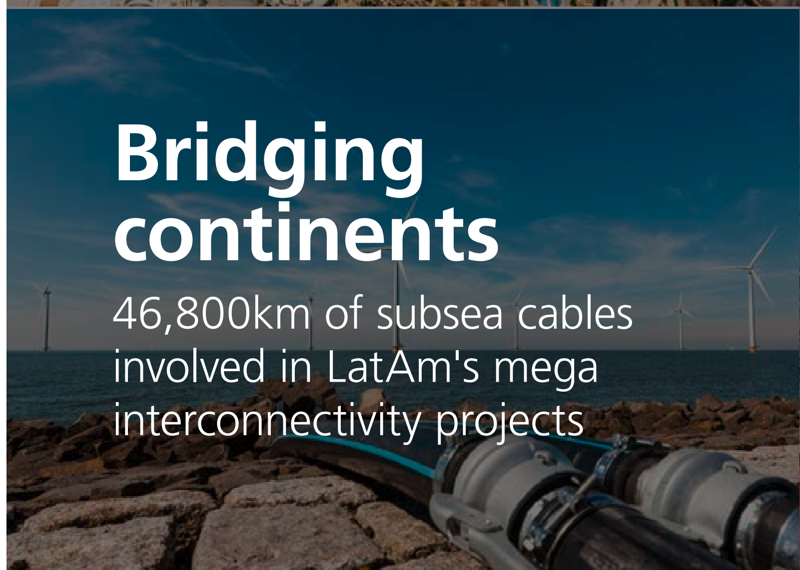
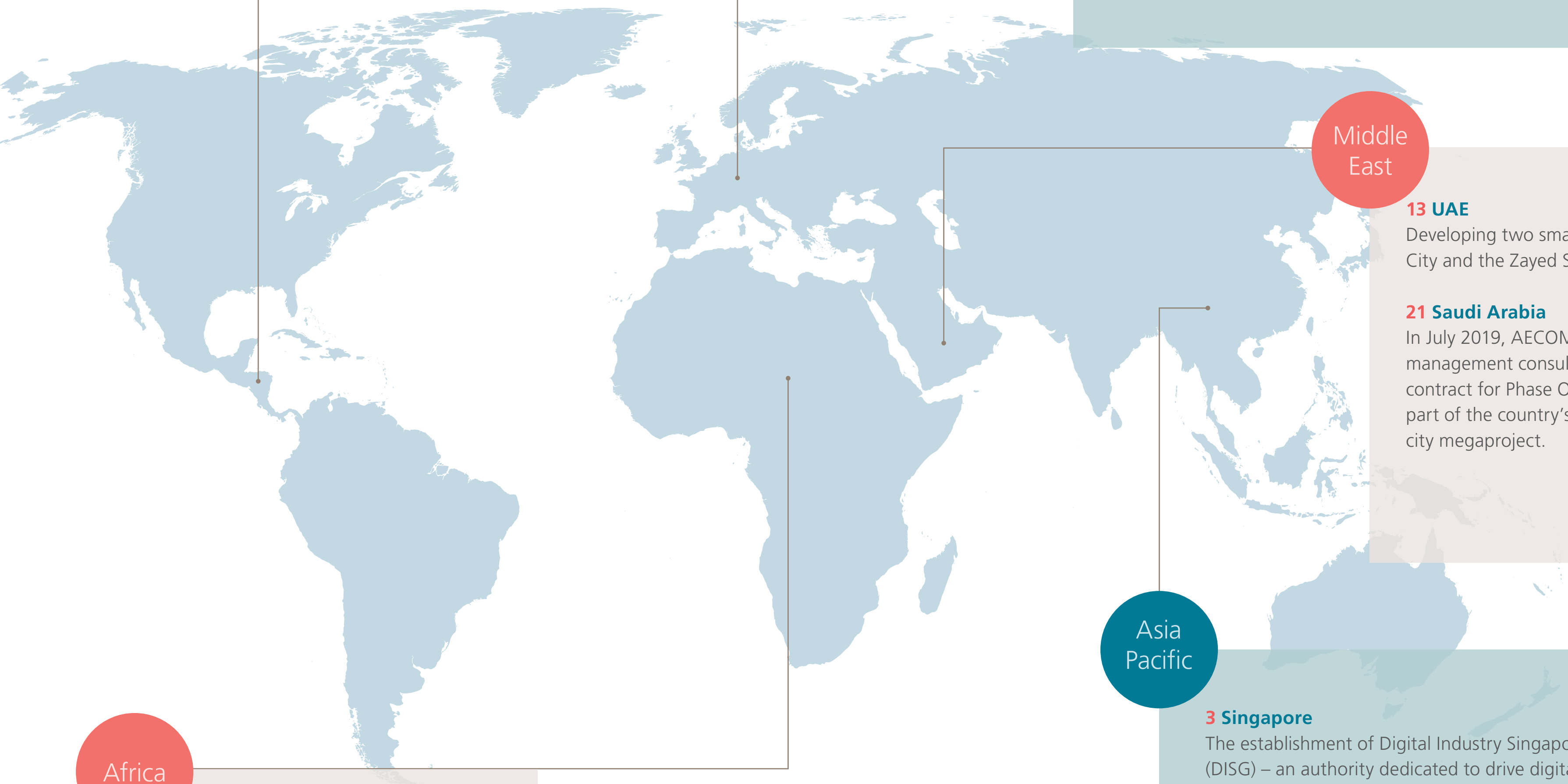


Global infrastructure opportunities



Americas

5 Canada
In 2019, Ontario committed USD 86bn for infrastructure over the next decade.

7 United States
President Trump's proposed USD 2trn infrastructure plan aims to bolster investor opportunities.

20 Chile
The government's plans to tender USD 2.6bn in concessions aimed at highways, hospitals and water projects in 2019 exhibit how core infrastructure investments are poised to drive the country's economic growth.

26 Colombia
The country is currently sourcing private investment for the first line of the Bogotá Metro, a USD 4.3bn new 24km line that will include the development of 15 stations connecting the capital's north and south east regions.

45 Brazil
The landmark EllaLink that will connect Spain, Portugal and Brazil – the first direct subsea cable link between Europe and Latin America – is scheduled for commissioning by the end of 2020.

Europe

1 Germany
The EU's economic engine is expected to increase its 2030 offshore wind capacity goal from 15GW to 20GW.

2 Netherlands
One of the world's most dynamic electric vehicle charging infrastructure markets saw oil giant Shell making its first play in the sector by announcing its partnership with engineering major AECOM for the roll-out of a nationwide charging network in July 2019.

9 UK
The USD 3.5bn acquisition of a majority stake in Gatwick Airport highlights the scale of investment opportunities in the secondary market.

10 Belgium
The 36% stake of Brussels airport to institutional investors is awaiting completion.

12 France
The 600MW Dunkirk offshore wind tender in 2019 was the country's most competitive auction yet.

15 Spain
The closing of the 300MW Talasol park in May 2019 marked one of Europe's largest unsubsidised solar transactions.

19 Poland
A major project currently in procurement is the USD 420m Olsztyn waste-to-energy plant.

41 Bulgaria
The IGB gas interconnector that will connect Bulgaria to Greece was granted a final licence to start construction in July 2019.

Middle East

13 UAE
Developing two smart cities, Masdar City and the Zayed Smart City.

21 Saudi Arabia
In July 2019, AECOM was awarded the management consultancy services contract for Phase One of Neom Bay, part of the country's USD 500bn smart city megaproject.

34 Oman
International investment is set to increase significantly following the country's updated privatisation and PPP procurement legislation, permitting 100% foreign ownership.

35 Kuwait
The construction of the USD 4bn South Saad Al Abdullah smart city began in 2019 and complements the county's 2.3% GDP growth.

Asia Pacific

3 Singapore
The establishment of Digital Industry Singapore (DISG) – an authority dedicated to drive digital infrastructure investments – further bolsters the county's reputation as Asia's data centre hotspot.

18 China
The government is planning to invest USD 113bn in rail, road and waterway projects.

25 Malaysia
The Malaysian government signed a revised agreement with China to resume construction work on the suspended East Coast Rail Link, a project that will see the development of a 648km link from Straits of Malacca to Pengkalan Kubor.

29 India
The 49% sale of Mumbai's international airport and the establishment of the National Investment & Infrastructure Fund in 2015 highlight the country's investment opportunities in traditional infrastructure assets.

40 Philippines
US investor engagement in the country's Build, Build, Build infrastructure programme – a China-backed scheme that will see between USD 57bn and USD 177bn invested in the country's core infrastructure assets.

Africa

36 South Africa
Restructuring of state-owned utility Eskom expected to de-risk private participation in renewable projects.

43 Morocco
Established itself as the leading energy hub on the continent.

49 Algeria
A bolstered pipeline of rail and transport projects creates a positive outlook for infrastructure opportunities.

New frontiers for infrastructure investors

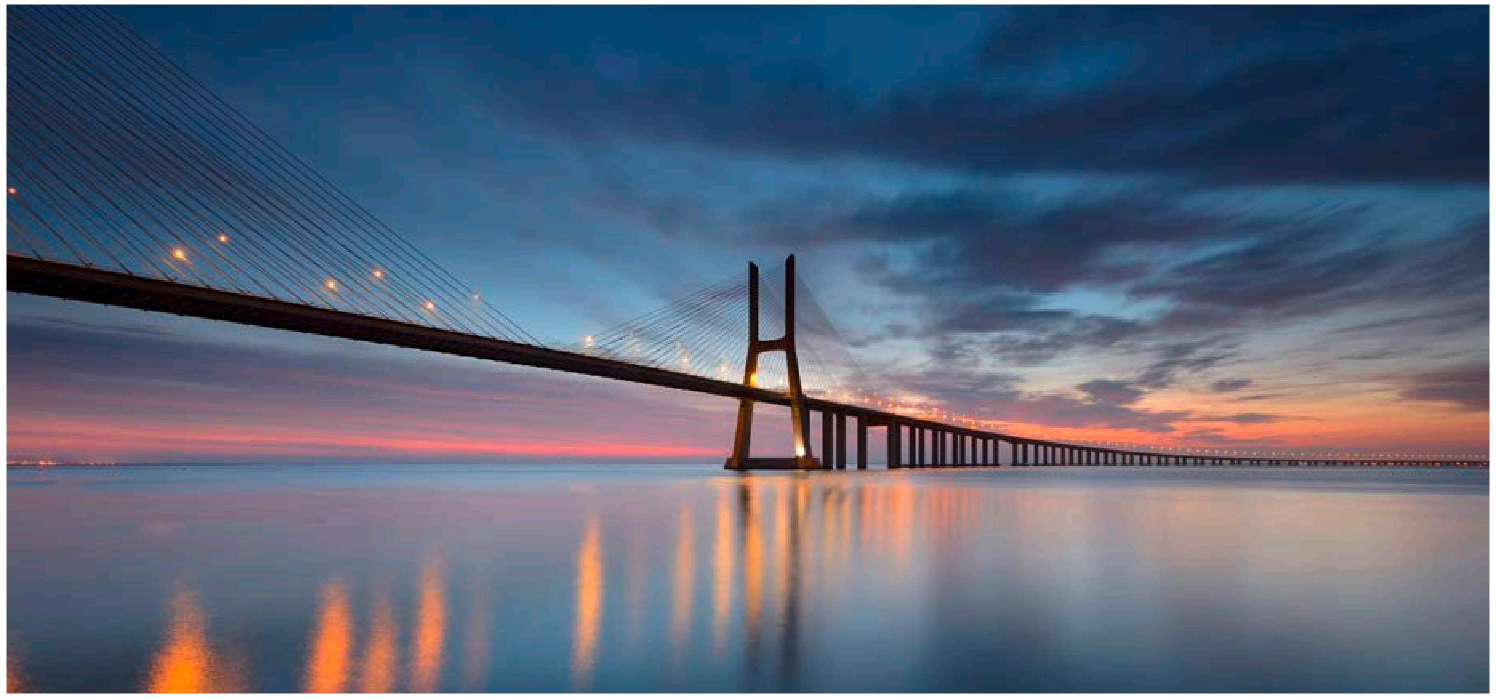
The shape of the infrastructure market continues to change. The 2019 Infrastructure Index uncovers four key areas that present exciting opportunities for investors tussling with the limited deal flow in traditional markets: PPP in new markets, 5G, subsidy-free renewables and floating technologies.

2019 possesses the hallmarks of a turning point in the global transition into greener, smarter and more sustainable assets. The clean energy sector has now arguably achieved maturity – and crucially cost parity with fossil fuels in a number of markets – and climate action has risen up the agenda. This has encouraged investors to demand sustainable destinations for their capital, breathing life into new technologies and social responsibility in the infrastructure space.

Across Europe, the race towards green leadership will gather pace, with proactive government policies providing the necessary incentives for investors and developers alike to reach their respective targets.

Germany, the top-ranking country in the 2019 Index, aims to make climate action a part of its national identity. To this end, investors can expect opportunities in electric vehicle (EV) charging infrastructure, the country's expanding offshore wind market and energy storage assets that will help manage existing and future renewables capacity.

The Brexit-effect on UK performance may cause concerns for some. However, despite the limited political attention to new greenfield developments, the UK government maintains a strong political will for transforming its energy networks with both England and Scotland establishing net zero emission targets for 2050 and 2045, respectively. Similarly, broadband targets have been reinforced, promising full fibre roll-outs and 5G capabilities within the next five years.

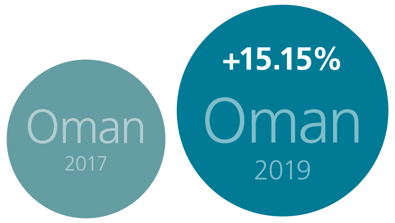


PPP demand in new markets

Flourishing PPP models and increasing openness towards the private sector across Latin America, Asia Pacific, the Middle East and Africa provide ample opportunities for investors to leverage their expertise, as well as their capital, in structuring large projects.

Gulf Cooperation Council (GCC) governments will continue a trend of extensive reforms. Oman's new PPP law, approved in July 2019, will allow for 100% international ownership of assets. A similar boost in attractiveness is expected in Saudi Arabia as investors anticipate the approval of the country's Private Sector Participation Law.

Oman's new PPP law improved its 2019 private participation score to 77.65, a 15.15 increase from 2017



Continents with significant infrastructure deficits, such as LatAm and Africa, will drive demand for PPPs to support their economic transformations, a factor that is already attracting capital from leading investors. According to inspiratia, activities in Brazil have contributed heavily to LatAm's total 2019 deal flow of over USD 22.9bn across infrastructure and energy assets – particularly due to the USD 8.6bn Transportadora Associada de Gas sale, where Canadian pension fund CDPQ and Engie acquired stakes in the transmission pipeline in June 2019.

Brazil's President Bolsonaro has promised a flurry of activity, including the privatisation of state assets. Meanwhile Chile, Colombia and Peru have bolstered their infrastructure strategies and procurement frameworks for projects, exemplified by Chile's USD 1.2bn Americo Vespucio Oriente toll road concession awarded to Spanish group, Sacyr.

In the case of Africa, several countries are restructuring regulatory frameworks to better attract foreign investment or to improve current PPP programmes. For example, Ghana has launched several PPP tenders, including a 27-year concession awarded to a 16-strong consortium of Ghanaian and European developers for the USD 2.2bn Eastern Railway Line PPP in April 2019. Meanwhile, Kenya awarded the USD 1.5bn Nakuru-Mau Summit Highway PPP to a Vinci Concessions-led consortium in February 2019.

With scarce opportunity comes high competition, putting pressure on projects to provide high yields.

India's first private train, developed under a PPP, the Lucknow-Delhi Tejas Express became operational on 5 October 2019. Investors are preparing for another wave of privatisations in the country, fuelled by this success story and the increased efficiency associated with private sector involvement in infrastructure projects.

Growing digital appetite

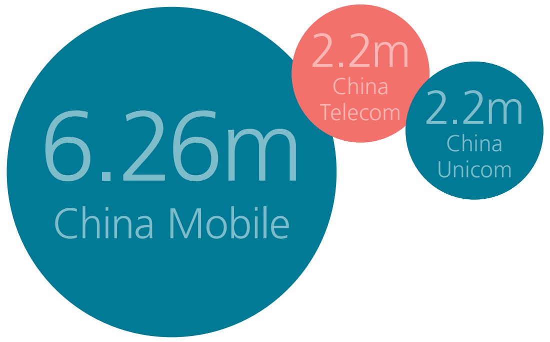
Globally, investors are strategically positioning themselves for opportunities in this sector with some involved in the 2019 broadband PPP tenders held in Peru, whose government is aiming to take advantage of LatAm's strong internet growth prospects. Meanwhile, France and Greece, among others, are channelling strong political will into plugging rural broadband connectivity gaps. Others are following the lead of Antin Infrastructure Partners and Goldman Sachs with their acquisition of UK altnet CityFibre in 2018, using dedicated funds or private equity to establish positions in growing digital businesses.

The Marguerite-backed EllaLink subsea cable project, connecting Brazil and Portugal, challenged the traditional dominance of complex consortia and tech giants in financing fibre interconnectors. In the Middle East, a number of countries are developing smart cities as they strive to become global economic hubs.

APAC countries are in the driving seat in the global race to adopt 5G.

APAC countries are in the pole position in the race to implement 5G. South Korea boasts the world's first nationwide 5G network which reached one million subscribers in 2019. Elsewhere, July 2019 saw Equinix and Singapore's GIC form a USD 1bn joint venture to develop hyper-scale data centres across Europe.

Number of advance orders for 5G plans made between 1 September 2019 and 10 October 2019



Source: China Mobile, China Telecom, China Unicom

China is quickly establishing itself as a global 5G hub. Between 1 September 2019 and 10 October 2019, over 10 million advance orders for 5G data plans were submitted to China's three mobile operators, namely China Mobile, China Telecom and China Unicom. The three companies will deploy a total of 130,000 stand-alone 5G base stations across the country by the end of 2019.

Corporate PPAs are quickly becoming the preferred choice of backstop for projects as demand for clean energy grows.

Subsidy-free future for renewables

Confidence in subsidy-free renewables assets has increased significantly over the past year, especially in markets such as Spain, Germany and Italy, with each presenting unique conditions for different technologies. As the value of subsidies declines and ultimately disappears, fully-merchant projects are beginning to surface in European countries with increasing appetite from lenders to provide debt. In August 2019, Banco Sabadell financed a 73MW portfolio of merchant solar PV plants for USD 33m in Ciudad Real, Spain. However, most subsidy-free projects are currently backed or are planned to be backed by PPAs. These provide an element of revenue visibility for lenders and also premium pricing from corporates.

Corporate PPAs are quickly becoming the preferred choice of backstop for projects as demand for clean energy grows. While the US has led such deployment over past years, Europe is rapidly catching up, with regions such as the Nordics and the UK making substantial contributions. In February 2019, Ørsted struck a 10-year corporate PPA with utility Northumbrian Water to supply power from its 573MW Race Bank project. This was considered to be the UK's first offshore wind corporate PPA, and more have followed.

Floating wind emerges

As nearshore project sites begin to become scarce, discussions are underway in several jurisdictions for floating wind projects to sate the demand for new developments. In July 2019, Equinor entered a joint venture with Korea National Oil Corporation to build a 200MW floating offshore wind project in South Korea. Meanwhile, in the UK, Equinor also secured a PPA with Danske Commodities for its 30MW Hywind project in Scotland.

Germany:
Spearheading the energy transition 2.0

#1 Germany takes the number one spot in the 2019 Infrastructure Index. The country's move to the top of the rankings is attributed to its spike in sustainability and innovation – an increase of almost 8% from 2017 – as well an improvement in ease of doing business.

Offshore wind revives the renewables programme
Offshore wind will play a central role in reviving the country's renewables expansion and help reach a target for 65% of renewable electricity by 2030. The German government is expected to upscale its offshore wind target from 15GW by 2030 to 20GW, boosting a market that is already the EU's second largest after the UK.

Two auctions took place in 2017 and 2018, awarding more than 2.5GW of total capacity, some of which were at zero-subsidy bids. The winning projects are now in the market looking for financing. German utility Innogy is looking to raise funds of EUR 600m for its for its 325MW Kaskasi project.

The secondary market is also very dynamic. For example, in February 2019 a consortium comprising Commerz Real, asset manager wpd invest, fund manager KGAL and the Ingka Group acquired 80% of the 402MW Veja Mate offshore wind farm in a deal worth EUR 2.3bn.

Grid for the future
In August 2019, Germany's Federal Network Agency proposed the construction of a fourth electricity highway to transfer the wind energy produced in the north to the industry-packed southern part of the country. The much-needed transmission lines are designed to balance existing production with consumption and enable further capacity.

Energy storage is an integral part of how the country plans to efficiently manage existing and upcoming capacity. Utilities all over the country are incorporating storage into their operations, tapping into the available revenue streams and cost-saving services. In May 2019, Enel Green Power inaugurated its 22MW Cremzow battery storage plant co-located next to energy company Enertrag's wind power plants in northern Germany.

The country's residential storage sector is also thriving, with more than 100,000 storage systems installed by the end of 2018. At the beginning of 2019, energy storage start-up sonnen, which was acquired by Shell in February 2019, created a virtual battery using residential storage installations and generates revenue from the Primary Control Reserve (PCR) market, the country's main frequency regulation service.

EV charging infrastructure
Germany is fast becoming a global powerhouse in electric vehicle charging infrastructure and innovation. By the end of 2018, the country held a 177,000 electric and plug-in hybrid car stock, Europe's third largest after Norway and the UK, and had more than 25,000 publicly available EV charging points, only second to the Netherlands in the EU. The National Platform for Electric Mobility, a Government advisory council, forecasts the country will need 2.4 to 3.5 million private charging points and up to 190,000 public ones by 2025.

Global and local EV leaders are aiming to secure a greater share in the country's booming market. Vattenfall, Shell and ABB are some of the international players competing with a strong domestic presence, such as Innogy, EnBW and Ionity, a Munich-based JV between major car manufacturers BMW, Daimler, Ford and Volkswagen.

Mixed demand for traditional infrastructure
Investment in traditional infrastructure has been steady, with money coming in from both the public and private sectors. This is due to a series of competitive road tenders being run in 2019. Successful rail concessions, such as the EUR 389m Augsburger Netze, where sponsor Amomare Vermietungsgesellschaft raised funds from NordLB, Helaba and BayernLB, have also recently concluded. In July 2019, Germany's federal government, alongside railway company Deutsche Bahn, announced an investment plan of EUR 86.2bn in rail infrastructure between 2020-2029, which should help to keep deal flow steady.

In May 2019, Austria's Strabag and France's Vinci were shortlisted for the EUR 670m A49 motorway PPP. The next motorway PPP planned by project authority DEGES is the B247 project in central Germany. The project is an expansion of a 24.4km motorway, along with the construction of 31 bridges. Nonetheless, due to increased competition and the relative scarcity of projects, bid prices are expected to be squeezed.

Energiewende aims to make climate action part of the German national identity.

On the other hand, public social infrastructure spending is declining, despite social needs being on the rise. It is expected that private capital will play a more active role in the infrastructure sector, although project financing opportunities are still limited.

Case study: The allure of Germany

TRIG casts a wider net into Germany's fast paced offshore wind market, making a move with the acquisition of a 25% stake of the Gode I wind farm.

In May 2019, a share of the 330MW Gode I wind project, located in Germany's North Sea, was acquired by The Renewables Infrastructure Group, otherwise known as TRIG, with the listed fund scooping up a 25% indirect equity interest from Global Infrastructure Partners.

The transaction represents 8% of TRIG's total portfolio of 70 assets across the UK, France, Sweden and Germany.

TRIG invests principally in a diversified portfolio of renewable energy infrastructure assets in the UK and Northern Europe, with a focus on operating projects.

Developed by Danish power company Ørsted, which retains a 50% stake, the project became operational in 2017. It is backed by a feed-in tariff until November 2027 and a floor price for an additional 10 years post-2027.

TRIG's March 2019 fund raise brought in GBP 302m and a portion of this was used to make the Gode I acquisition, supplemented by a draw-down from the company's revolving credit facility.

TRIG is managed by InfraRed Capital Partners, a global investment manager headquartered in the UK.

Policy shift, from UK to Europe

The transaction marks a shift in policy to allow greater exposure to non-UK projects – notably in Germany, Ireland, France and Scandinavia – which currently stand at 42% of its portfolio following the deal. In October 2019, its investment policy was modified to increase exposure from 50% to 65% of total portfolio value.

Germany aligns with TRIG's strategy to build its portfolio on stable renewable energy frameworks. The company expects mainland Europe to yield 100GW of growth by 2030. Germany's target for wind and solar capacity stands between 215GW and 237GW for the same period.

TRIG is drawn to the pace at which Germany's offshore market has grown in the past four years. The transaction grants the firm entry into the second largest offshore wind market after the UK.

The sector is not only integral to Germany's energy transition, with plans to scale additional offshore wind capacity from 15GW to 20GW by 2030, but it also boasts an attractive secondary market. Big ticket deals have already transpired for the EUR 1bn 400MW Bard project located 100km off the coast of north-western Germany, and the EUR 2.3bn 402MW Veja Mate offshore wind farm in the German North Sea.

TRIG is drawn to the pace at which Germany's offshore market has grown in the past four years.

Germany aligns with TRIG's strategy to build its portfolio on stable renewable energy frameworks.

United Kingdom:
UK eyes renewables leadership

#9 The UK falls to number nine in this year's Infrastructure Index. Brexit has created political stasis, dominating the political agenda at the expense of other priorities and creating uncertainty over the future of key infrastructure projects. But while its infrastructure and renewables market tackles the impact of this political uncertainty, the UK is placing a bet on global renewable energy leadership with its "net zero" strategy.

Delays on some flagship projects are contributing to a general perception of uncertainty.

Uncertainty takes its toll

The result of the 2016 EU membership referendum has meant that government time and resources have been diverted to Brexit at the expense of other matters, including infrastructure. The impact of political uncertainty has handicapped the UK's 2019 score, without which it would have ranked 5th rather than its current position of 9th.

Since the referendum, lending to UK projects has decreased significantly and the country could face a multi-billion-pound funding gap should the European Investment Bank, a key source of long-term investment, cut the UK's membership. The UK government is deliberating the option of creating its own national infrastructure bank to support vital infrastructure post-Brexit.

Position without Brexit:

Position with Brexit:

The sectors most likely to experience severe, but short-term, costs in the event of a no-deal Brexit are those with operational assets such as ports and airports that are heavily exposed to trade and passenger traffic with the EU.

At the same time, the Labour Party's re-nationalisation plans for the UK's energy, railway and water infrastructure are causing mounting concerns for investors.

Confirmation by the then-chancellor Philip Hammond in his 2018 Autumn Budget that the Project Finance Initiative (PFI) was coming to an end has left the UK market wondering how the government plans to mobilise private capital for UK infrastructure. Knock-on pressure is now being felt in the UK's construction industry, as it heads for a downturn due to limited greenfield projects.

In a bid to address these concerns, plans for a national infrastructure strategy were announced after Boris Johnson became Prime Minister in July 2019. Simultaneously, Scotland launched consultations to revise its national transport strategy, aiming to increase spending over the next 20 years.

Until future concrete proposals are set in motion, delays on some flagship projects – such as the expansion of Heathrow Airport, HS2 and Hinkley Point C – are contributing to a general perception of uncertainty.

However, the country still has several greenfield projects that are moving forward, such as London's Thames Tideway and Silvertown Tunnel. In July 2019, Highways England launched a tender for the A303 (Stonehenge) tunnel with the scheme now set to use public money rather than private finance.

Overall, the UK still offers plenty of opportunities, particularly in the secondary market, as demonstrated by the acquisition of a 39% stake in Cadent Gas for GBP 1.9bn by Macquarie Infrastructure and Real Assets in July 2019.

Full-fibre by 2025

The UK lags behind some of its European peers – notably Spain – in the roll-out of fibre-to-the-home broadband infrastructure. The digital divide is felt in both hard-to-reach rural communities and cities like London and Manchester.

Sizable investment from the private sector is expected, given Prime Minister Boris Johnson's goal to reach full-fibre by 2025, instead of 2033 as previously scheduled.

The UK's broadband gap already offers opportunities to new entrants – altnets such as CityFibre – that are challenging the market leadership of BT-owned Openreach.

Other opportunities are likely to spring out of the 5G roll-out, as all UK mobile operators (EE, Vodafone, O2 and Three) are set to deploy the technology in the country before the end of 2019.

Net zero 2050

Counterbalancing the current hesitancy in delivering big infrastructure projects, the UK is now securing leadership amongst G7 economies in the race to decarbonisation.

In June 2019, the previous UK government led by Theresa May pledged to reach net zero carbon emissions by 2050, up from the previous goal of an 80% reduction from 1990 levels by the same year. The power sector remains a key driver of this goal and one in which the government can effect change with the relevant regulations and incentives as the energy transition is crystallised as a firm national policy.

Scotland, however, will beat the rest of the UK to net zero. The Scottish parliament has unanimously approved legislation committing Scotland to achieving net zero emissions by 2045.

Already the cradle of offshore wind development, driven by the contracts for difference auctions – with its third round results awarding 5.5GW out of 6GW to six offshore wind allocations – the UK is now among the countries spearheading the global transition to subsidy-free renewables.

In particular, the country boasts a growing track record of corporate PPAs, thanks to a relatively high number of creditworthy industrial companies eager to lock in energy prices while enhancing their green credentials.

Another crucial factor in accelerating the UK's energy transition will be the development of new interconnectors with other European countries. The first subsea UK-Belgium interconnector, called Nemo Link, came online in January 2019 and new projects are currently being developed with France, Norway, Denmark and Ireland.

Rolling stock renewals

The UK's rolling stock market has been gathering steam in 2019 as investors position themselves for the substantial introduction of new rail vehicles.

Political uncertainty in the country has not deterred major rail players like Greater Anglia – jointly owned by Abellio and Mitsui. It is embarking on a GBP 1.4bn roll-out of 38 bi-mode trains and 20 electric trains and aiming to replace 169 trains by end of 2020.

The UK Department for Transport's rail franchise schedule indicates that the Cross Country network – the most extensive network in the UK – is likely to be the next franchise to execute new rolling stock orders from November 2019 onwards.

New fleet deployments and franchising are also triggering secondary market activity as investors see more value in competitively priced new fleets compared to financing the refurbishment of existing fleets. For instance, in May 2019, a consortium consisting of Japan Infrastructure Initiative, Rock Rail, Equitix and Dalmore Capital acquired an additional 15% stake in concessionaire Agility Trains from Hitachi Rail for the first phase of the Intercity Express Programme which will replace 125 carriages and expand the fleet.

The UK is securing leadership amongst G7 economies in the race to decarbonisation and spearheading subsidy-free renewables.

Interview: Dalmore Capital

Alistair Ray
Chief Investment Officer (CIO)
and Co-founder

Dalmore Capital is a fund manager overseeing GBP 5bn of assets in the UK and investing in over 140 infrastructure projects.

The UK infrastructure market has been shrouded by indecision as all political focus remains on Brexit but Ray still sees ongoing activity, particularly in non-regulated assets. What should be of interest to investors, according to Ray, is whether limited government activity in procuring greenfield investments in recent years will "build up in the future" and if new models replacing PPPs would be considered suitable investments with attractive returns.

Nationalisation plans from the Labour Party are adding fuel to the fire, as regulatory clampdowns pose challenges for the UK's regulated infrastructure assets, heralding skinnier returns.

To overcome the ambiguity, Ray places his belief in the highest quality regulated assets, stating, "If you are invested in the top performing companies like Anglian Water and Cadent Gas then, through them providing good operational performance to the customers, you will do well as investors."

However, unlike stifled greenfield opportunities, the secondary market will be largely determined by a politicised climate that is making foreign investors hesitant.

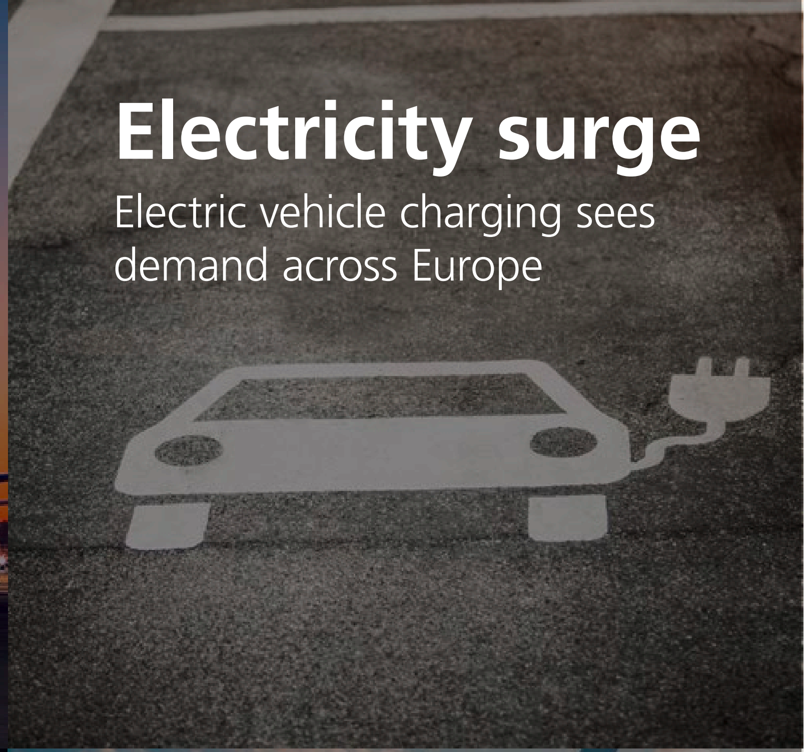
"The politicised climate may lead to some investors, particularly from overseas, looking to exit which will produce opportunities within the UK market. And it may be that some of those opportunities are less competitive than they have been in the past because of fewer bidders," he adds.

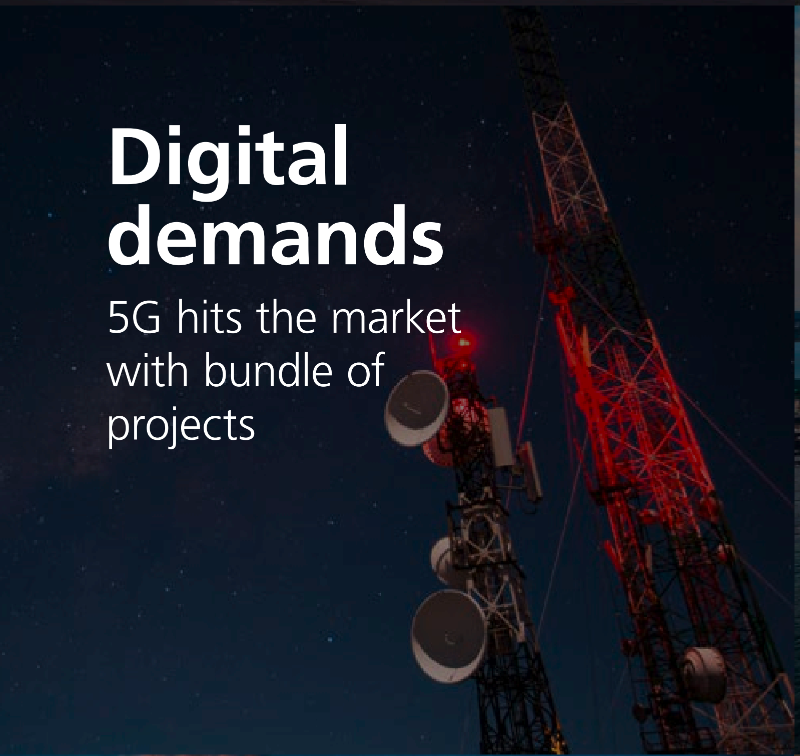
Future models
Under the Bazalgette consortium – also featuring Allianz, Amber Infrastructure, DIF, International Public Partnerships and Swiss Life Asset Management – Dalmore Capital utilised the regulated asset base (RAB) model in the GBP 2.3bn Thames Tideway deal. According to Ray, Thames Tideway is an excellent example of a financing structure that benefits all project participants by "positioning risk with the parties that are best able to take it".

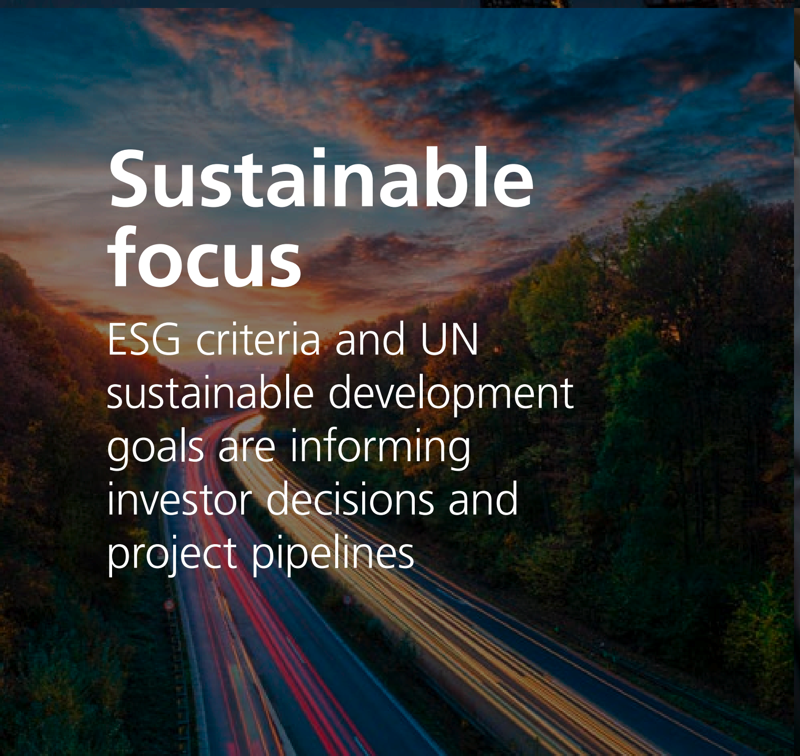
"It became financeable because infrastructure investors were asked to take the risks that they were able to manage around procurement, around financing but also due to being able to share other risks – which we had less control over – with the other participants to ensure that all parties were incentivised to manage such risks," concludes Ray.

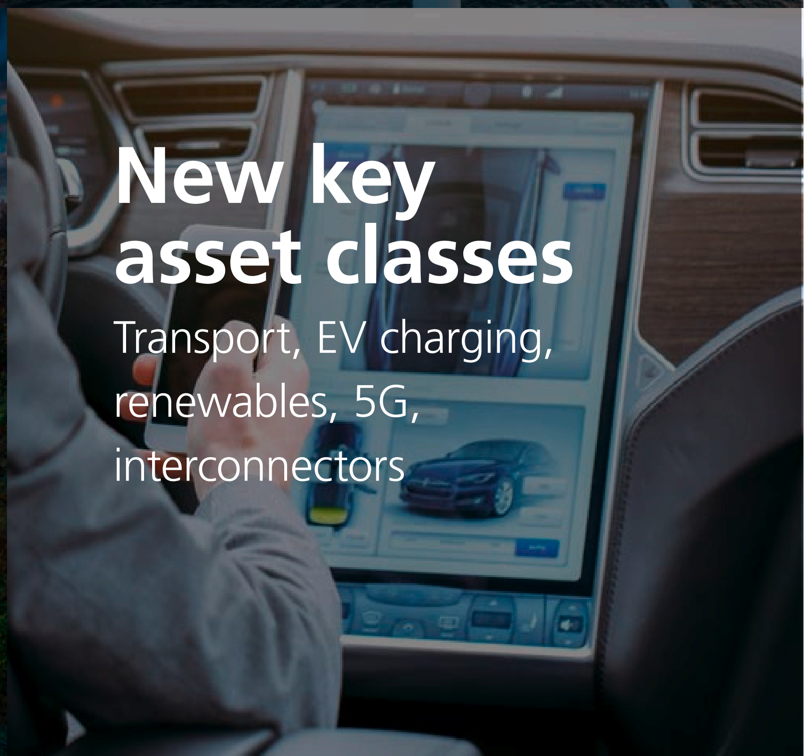
RAB is ordinarily used to govern utilities, after emerging as a method of valuing existing UK assets during privatisations. Interest has risen in applying it to new greenfield opportunities such as nuclear. In 2018, the Department for Business, Energy and Industrial Strategy announced that the viability of RAB for nuclear projects was under review. A public consultation closed in October 2019.

To Ray, the significant investment size and the fact that new nuclear power stations are currently a core government policy makes the nuclear sector interesting to watch.









Europe:
Brimming with opportunities

Europe's renewables sector marches towards merchant power projects in 2019 with market disruptors well positioned to capitalise on the subsidy-free solar boom.

The rise in the popularity of corporate PPAs has also reached Central and Eastern Europe (CEE). Poland is making big strides in the clean energy sector, with a wind farm producer and a car manufacturing group signing one of its first PPAs in August 2018. The agreement is also Europe's first automotive renewables transaction. Other transactions followed. Polska Grupa Energetycza (PGE) is instrumental in expanding the country's pipeline of PPAs, having signed new agreements in 2019 with the leading chemical company Grupa Azoty. In 2019, Signify signed its first European renewable energy virtual power purchase agreement (VPPA) in a 10-year deal with Green Investment Group's Kisielice onshore wind farm in Poland.

Poland has performed strongly thanks to the country's political stability, ease of doing business and private participation scores improving compared to previous years. Favourable policies implemented in the energy sector – including assigning a separate basket to onshore, offshore wind and small PV in auctions – have boosted renewable project development.

Spain, a current global hotspot for solar in 2019, is set to develop approximately 4GW of PV installations by the end of 2019, with an overall renewable electricity target already being raised by the country's government to 74% by 2030. From the beginning of 2019 to October, 16 PPAs were signed for approximately 3.3GW of capacity.

Due to the impressive performance of its solar sector, which has attracted some of the leading international investors, Spain's Index score in 2019 was 74.40, considerably higher than its 2017 performance of 69.09.

Crucial improvements in the sector were witnessed across Europe, with markets such as Italy and Portugal, as well as the Scandinavian region, set to produce proliferations of PPA-backed projects similar to those in Spain.

Boasting the highest growth in passenger traffic in Europe, CEE countries are announcing big airport expansion projects.

1	Germany
2	Netherlands
6	Norway
8	Finland
9	United Kingdom
10	Belgium
11	Austria
12	France
15	Spain
19	Poland
22	Italy
23	Czech Republic
24	Slovakia
28	Hungary
31	Russia
39	Romania
41	Bulgaria
46	Ukraine

Developing the next European airport hub

A high level of activity in the airport secondary market and sturdy passenger growth has fuelled the interest of seasoned airport owners such as Vinci, AMP Capital and Ardian. With several attractive and profitable assets, CEE countries are providing a pocket of opportunity for airport investors in 2019.

Boasting the highest growth in passenger traffic in Europe, CEE countries are announcing big airport expansion projects, with some also planning new greenfield additions, including in Romania and Lithuania.

In July 2019, a new contender as a regional hub emerged with Vinci taking control of Serbia's Nikola Tesla Airport with plans to invest roughly EUR 730m to buildup the facility into the best-connected airport in the region.

Strategic co-operation in EV charging

CEE countries are also making strides with electric vehicles following an upsurge in demand for supporting infrastructure. Germany-based Ionity partnered with Shell in Q3 2018 to deploy EV charging stations in 24 European countries including Poland, Czech Republic, Hungary and Slovakia, as part of what could be Europe's largest ultra-fast charging network.

Austria's largest electricity provider, Verbund, also partnered with Enel X, Smatrics, Greenway and OMV to develop an EV charging infrastructure in Romania, Slovenia, Croatia, Hungary and other countries in the region.

Country summaries

2 Netherlands
The Netherlands continues to be a top market for infrastructure investors. The country's traditional and digital infrastructure sectors present vigorous opportunities for global players, such as Macquarie Capital, Siemens and Shell.

The privatisation of Dutch utility Eneco has attracted multiple bidders, with Mitsubishi, Macquarie and EDF expressing interest. In July 2019, US-based investor KKR teamed up with Rabobank to bid for the company while PGGM and Shell joined forces in January 2019.

6 Norway
First introduced under former Prime Minister Kjell Magne Bondevik's centrist coalition, the Norwegian PPP programme has been buoyed by the success of the RV3/RV25 project, the first closed in the country since 2006.

On 13 February 2019, the Norwegian Public Roads Administration published a risk clarification document for the RV555 Sotrasambandet PPP project to facilitate contract negotiations. The project is valued at EUR 1.04bn.

8 Finland
Finland's digital infrastructure strategy and optical fibre deployment initiative are in line with the government's plans to turn the country into a global communications leader. To date, Finland has granted roughly 30 licences for 5G testing with the country also ramping up its renewables programme.

A consortium of Finnish pension funds established a EUR 300m renewable energy investment platform in the first half of 2019. The new company, Exilion Tuuli, has already acquired three domestic onshore wind assets with a cumulative capacity of 73MW for EUR 90m.

9 United Kingdom
With the pound weakening and the UK set to become a third party in any future cooperation with the EIB, infrastructure sector players are facing a lack of certainty and direction.

Nonetheless, the country's multi-billion-pound offshore wind sector and its ambitious net zero and fibre targets play an important role in securing the UK's position among the top 10 jurisdictions globally.

10 Belgium
One of the most attractive social infrastructure markets in Europe, Belgium boasts a robust pipeline of schools with the education infrastructure agency, AGION, tendering roughly EUR 190m worth of school PPPs over the past 12 months.

11 Austria
Austria's 5G auction began in February 2019 with seven bidders receiving licences for the utilisation of spectrum in the 3.4-3.8GHz band and roughly EUR 188m raised.

In July 2019 the country made strides in liberalising its broadband sector when Allianz Capital Partners acquired a 74.9% stake in Lower Austria-based provider NoGIG which was entirely owned by the state.

12 France
President Emmanuel Macron's infrastructure and energy ambitions were hobbled by public opposition and a series of contract-related delays. Despite the stalled privatisation of Aeroports de Paris, French regional airports continue to attract significant interest from private, long-term investors. In July 2019, the concession contract for Lille-Lesquin airport was awarded to an Eiffage-led consortium.

The 600MW Dunkirk offshore wind auction attracted an impressive number of competitive bids from market players such as EDF, Equinor, Ørsted, Vattenfall and Engie. Following the favourable auction results, the government of France announced it will double its offshore wind target to 1GW per year.

15 Spain
Spain's traditional infrastructure sector is steadily recovering after economic damage to toll road operators, due to repeated legal disputes over lost revenues because of post-financial crisis traffic slowdowns.

In June 2019, France's Meridiam bought an 85% stake in the Autopista del Sol from Ferrovial's Cintra and Unicaja Banco. The project comprises two independent concessions, Ausol I and Ausol II, which form part of the larger AP-7 road.

19 Poland
Poland's ambitious coal generation reduction target, necessitating a 50% decrease by 2040, is a driver of investment in renewables, while the country is set to become one of the most promising offshore wind markets globally.

The Polish government is targeting the development of 10GW offshore wind capacity by 2030. The number of projects coming to the market has favourably affected technology prices.

22 Italy
In August 2019, Marguerite announced its acquisition of a 48.15% stake in the Italgas subsidiary Medea for an initial investment of EUR 25m. The deal is expected to reach financial close at the end of the year.

Italy signed the FER1 decree at the beginning of July 2019, strengthening its commitment to deploying renewable energy. The first solar auction process, for 500MW of capacity, kicked off on 30 September 2019.
An additional three tenders will be launched in 2020.

23 Czech Republic
Macquarie Infrastructure and Real Assets (MIRA) entered a deal worth EUR 1.8bn in April 2019, taking over the Czech-regulated gas distribution network, Innogy Grid Holding.

Another noteworthy project in the Czech Republic is the ongoing D4 highway PPP procurement process, with Hochtief/Strabag, Vinci/Meridiam and Porr/Macquarie/OHL/Egis the shortlisted consortiums as of April 2019.

24 Slovakia
The construction of a Slovakia-Poland gas interconnector began in September 2019. The project is being executed by the Slovak transmission system operator EUSTREAM, collaborating with its Polish counterpart GAZ-SYSTEM.

In the same month, Slovakia's government also expressed interest in facilitating Azerbaijani gas transit to the EU. The two governments are currently in negotiations to cooperate in a wide range of sectors including energy, transport, agriculture and tourism. Slovakia also launched its first prison PPP project.

28 Hungary
The reconstruction of the 152km Hungarian section of the Budapest-Belgrade rail line was awarded in April 2019 to a Chinese-Hungarian consortium including China Tiejiuju Engineering and Construction, China Railway Electrification Engineering Group and RM International. The project is valued at EUR 2.3bn.

31 Russia
Russia's leap into the renewables sector received attention from several international market players, with Finland's Fortum taking home nearly 1GW of wind and solar capacity in the auction held between 29 May and 9 June 2018.

39 Romania
In February 2019, the Romanian government proposed a list of 21 PPP projects, including highways, hospitals, railways, power plants and tourist resorts. The plan was met with scepticism since the country lacks the necessary experience to implement PPP projects.

One of the most advanced tendered projects was the Ploiesti-Brasov motorway, the sole remaining bidder for which was a consortium comprising China Communications Construction Company and Turkish construction firm Makyol. But in July 2019 the Romanian government decided to declare it a project of national importance and to finance it from government funds instead.

In July 2019, the Romanian government decided to declare the highway a project of national importance and finance it from government funds.

41 Bulgaria
In July 2019, after several delays, the Transport Ministry of Bulgaria selected a preferred bidder for Sofia Airport. A consortium including Meridiam, Strabag and Munich Airport was selected as the preferred bidder for a 35-year concession.

The 182km Bulgaria-Greece gas interconnector was granted a final licence in July 2019 enabling ICGB – the company developing the project – to commence construction. The project is worth approximately EUR 220m.

46 Ukraine
A spike in Ukrainian onshore wind activity in 2019 points to a renewables market heading in the right direction. At the end of July 2019, VLC Renewables and LongWing Energy announced the financial close of one of the country's largest wind farms to date, the 500MW Zaporizhia Phase I.

One month before, in June 2019, another Ukrainian wind farm, the 200MW Primorskaya, also reached financial close, having raised funds from a group of German banks. The project's total cost is approximately EUR 150m.

Interview: First State Investments

Niall Mills
Partner Infrastructure Investments

Established in 1988 in Australia, First State Investments is a global asset manager with approximately AUD 223bn of assets under management.

First State launched its third European infrastructure fund in September 2019 with a EUR 3.5bn target and a focus on mature assets in the energy, transportation and utility sectors.

Despite a period of change, caused by Brexit and other political changes across Europe, there remains an attractive pipeline of opportunities in European infrastructure, according to Mills.

First State recently closed the OU Utilitas transaction in Estonia on a bilateral basis, signed a deal to acquire the Vopak storage terminals and purchased a substantial stake in OLT's Italian offshore LNG terminal.

Reflecting on these deals, Mills says, "We are looking for well-managed businesses with high quality management teams and assets with a long-term horizon, good environmental track-record and excellent customer engagement.

"Good relationships with the local community are another decisive factor when assessing opportunities in the infrastructure sector." Several infrastructure sectors offer outstanding potential, according to Mills, with European countries having distinct, individual infrastructure development agendas.

"Transformation and innovation in technology are really impacting the electricity sector which not only offers distribution companies the ability to control power demand more dynamically than even five years ago but is also preparing the network for electric vehicle roll-out and self-charging points as well as other emerging demand profiles," says Mills. A number of airport concessions as well as pure M&A opportunities have already come to market in 2019 with most transactions attracting multiple experienced bidders, including the likes of Vinci, Meridiam and ADP.

"Airport passenger numbers have grown a lot in the past 10–20 years and many major hub airports are near capacity. We have witnessed this with the ongoing UK debate around building more runways and terminals. We need infrastructure solutions, or we will encounter a capacity problem soon."

An ESG era

ESG leadership is increasingly perceived as an intrinsic part of infrastructure businesses and an area Mills identifies as assuming the highest importance. He says, "ESG has become a top priority for infrastructure investors. All of our investors and sector peers are trying to introduce strong ESG strategies and policies. This is because the sector is becoming increasingly aware of its social obligations and wants to do the right thing for the environment."

According to him, businesses must display genuine commitment by implementing ESG standards from the bottom-up.

"ESG is very much part of our business, it is not a built-on, it is not an extra, it is business as usual," concludes Mills.

Interview: Meridiam

David Delgado-Romero
Partner and Director, CEE

With over EUR 50bn in deployed capital and roughly EUR 6.4bn worth of assets under management, Meridiam is a long-term global investor and asset manager.

In 2019, Meridiam was selected as the sponsor for Poland's Olsztyn waste to energy (WtE) plant, was the preferred bidder in Bulgaria's Sofia Airport tender and participated in an impressive number of transactions globally.

"The WtE sector is developing all over CEE countries and offering great perspective. Our interest in this sector is increasing and it is evident that this type of infrastructure will bring and attract significant levels of investment in the near future," says Delgado-Romero.

The target set by the European Union, of processing 50% of member states waste by 2020, have been key drivers of investment in the waste management sector.

Rethinking strategy

"Our transition fund has target assets that contribute to the lower emission economy and WtE is an asset class we are targeting, as we aim to expand our portfolio of investments.

"We aim to target a wealth of infrastructure assets that comply with our standards but also reflect our willingness to contribute to the UN sustainable development goals," says Delgado-Romero.

Nonetheless, increasing competition in a wide range of infrastructure sectors – complemented by market liquidity – is making it more difficult for investors to thrive in this climate.

"Meridiam has addressed this phenomenon for some time and one of the initiatives we implemented was to develop and expand our business in new geographical areas. This has proven to be a very good approach and is allowing us to continue expanding our investment capacity," says Delgado-Romero.

The scarcity of bankable projects is one of the factors affecting levels of competition in the market. In order to best capitalise on existing opportunities, investors have to rethink their strategies.

"Our investment in Allego is a good example which shows how Meridiam is identifying ways to enter new markets."

Allego is one of the global leaders in the EV charging infrastructure sector with over 14,000 stations already deployed across Europe.

As Delgado-Romero explains, direct growth is not the only factor calling for new infrastructure, but also compliance with ESG standards. According to him, increasing environmental standards, reducing congestion, pollution or noise and improving quality of lives are current hot topics.

Outlook

Interest in Europe will continue to be high, despite current macroeconomic and political concerns. According to Delgado-Romero, authorities in some CEE countries understand the situation and have been providing support in sectors such as rural fibre deployment, road PPPs and airports.

"My outlook is positive and I think we need to be both optimistic and realistic in terms of the future. The public sector is undergoing a period of transition towards fully accepting the involvement of private partners in the operation of public infrastructure.

"This is happening, but it is yet to be completed," he concludes.

Case study: Europe steps up its WtE game

Europe is stepping up its WtE game with multiple projects in the UK, the Netherlands and Serbia. Racing to make headway on the EU recycling target of processing 50% of the country's waste by 2020, Poland's waste-to-energy market is also thriving.

Waste management laws in Poland are being revised regularly and changes are frequently introduced to secure the appropriate infrastructure and successful operation and maintenance of facilities.

Olsztyn, Poland's new WtE hub

Located in north-east Poland, in the capital of the Warmian-Masurian region, the Olsztyn WtE project was awarded on 17 June 2019 to a Meridiam-led consortium under a 30-year PPP contract.

Total project costs are estimated at EUR 780m with Meridiam taking ownership of an 80% stake. China's Urbaser – an environment management company active in the urban services, waste and water treatment sectors – holds the remaining 20% share.

The new combined heat and power plant for Olsztyn aims to provide clean energy for the 173,000 inhabitants of the city, replacing an ageing fleet of coal-fired stations.

The project will receive roughly EUR 40m in funds from the European Union with the direct beneficiary being a municipal-owned company, Miejskie Przedsiebiorstwo Energetyki Cieplnej.

Approximately EUR 100m in debt finance will be provided by a consortium of lenders including the European Investment Bank.

Multiple WtE projects come to market

Elsewhere in Europe, waste firm Indaver and construction business Acciona secured a contract with the councils of Aberdeen City, Moray and Aberdeenshire in August 2019 for the construction and operation of the Ness Energy Project in Aberdeen, Scotland. The project's total cost is estimated at EUR 164m, to be provided by the three local authorities.

Another Scottish WtE site also recently moved ahead, the Drumgray Energy Recovery Centre project, under the company FCC Environment. A master plan was submitted in July 2019 to the local council for approval with the project earmarked to cost EUR 408m.

In July 2019, the developers of Serbia's EUR 339m Beo Cista Energija WtE power plant signed a 25-year contract to provide the city of Belgrade with heat. The companies, namely Suez, Itochu, and Marguerite, will also sell electricity to Serbia's power utility EPS under a 12-year PPA.

On 10 July 2019, the Lostock WtE plant in Cheshire, UK was granted approval for a capacity increase of 30MW. Copenhagen Infrastructure Partners and FCC Environment acquired the asset from Tata Chemicals in 2018. The project, estimated at EUR 534m, reached financial close in March 2019.

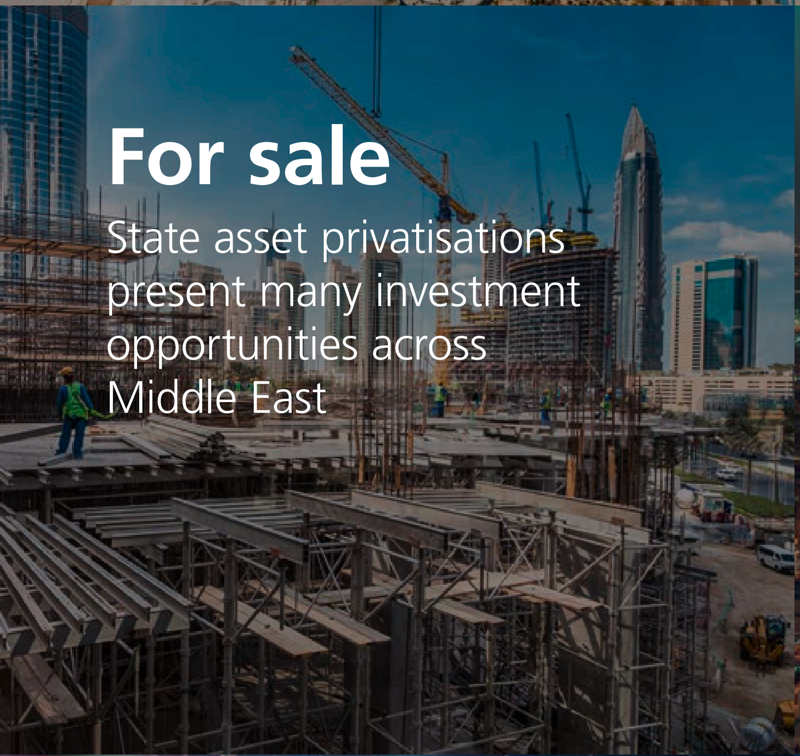
North Carolina-based IPP Blue Sphere announced in March 2019 it had raised EUR 38.9m for the Sterksel-based Dutch WtE plant, including EUR 29.2m from BNG Bank, EUR 6.42m in junior debt from BNK Bank, Energietransitie Financieringsfaciliteit (ETFF) and Nationaal Groenfonds and a EUR 3.25m equity investment from Israel's Helios Capital.

Pervasive PPP

Robust PPP legislation in Kuwait, Oman, Qatar, and the UAE delivers confidence to investors

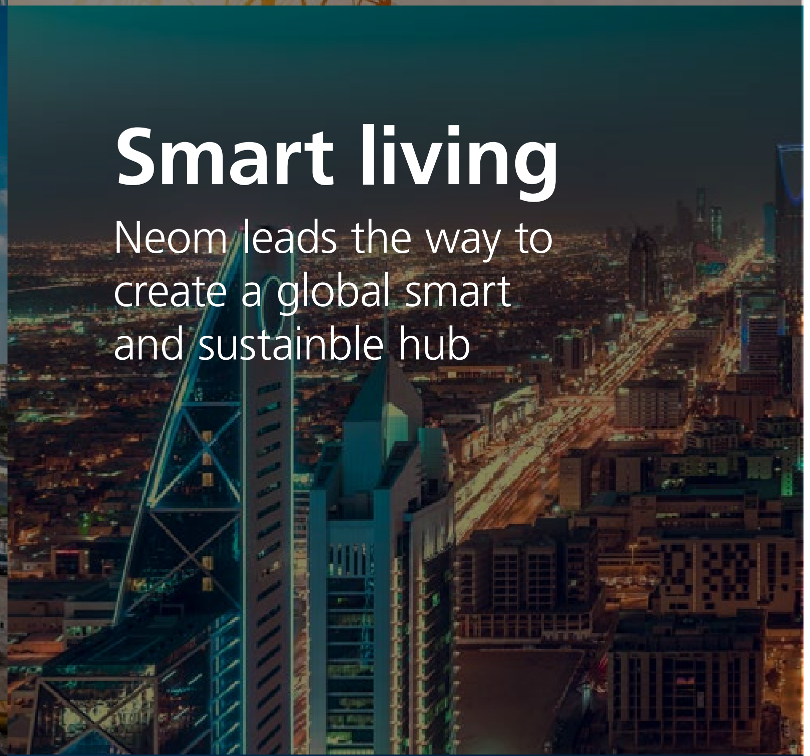
Powered up

USD 1trn forecast to be invested in power projects up to 2024



For sale

State asset privatisations present many investment opportunities across Middle East

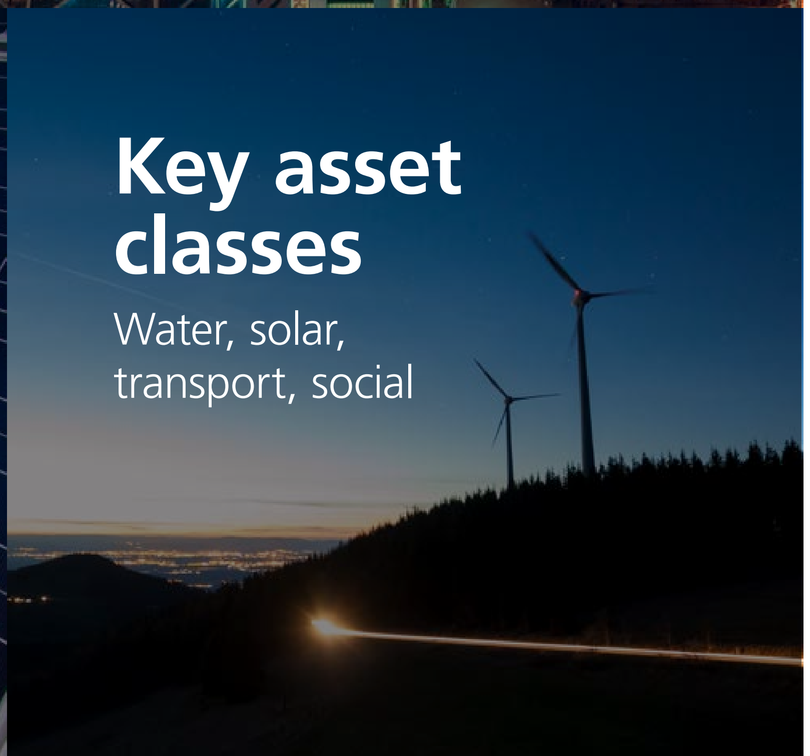


Smart living

Neom leads the way to create a global smart and sustainble hub

Private participation

Water, transport and solar projects saw the highest levels of private participation in 2018-2019



Key asset classes

Water, solar, transport, social

Middle East:
Smart cities shaping the future

As private-led investments continue to build across the region, the Middle East makes headway in becoming a global smart, and sustainable, city hub.

Funding for the Middle East's large-scale projects remains heavily state-financed but the share of private finance is slowly, but steadily, increasing. Supportive PPP legislation in the UAE, Kuwait, Qatar, Oman and soon Saudi Arabia is set to increase investor confidence and support the region's economic diversification.

In particular, the Middle East has presented some of the most ambitious solar and onshore wind projects, closing a pipeline of over 2.8GW according to inspiratia. The region – collectively and individually – is putting renewable energy at the centre of its growth agenda as well as fuelling its smart city ambitions.

13	United Arab Emirates
21	Saudi Arabia
34	Oman
35	Kuwait
38	Turkey
42	Qatar
50	Iran

In particular, the Middle East has presented some of the most ambitious solar and onshore wind projects, closing a pipeline of over 2.8GW according to inspiratia.

Country summaries

13 United Arab Emirates
Abu Dhabi and Dubai boast a significant pipeline of energy, transport, water and digital infrastructure projects.

KKR and BlackRock acquired a 40% stake in Abu Dhabi National Oil Company's 750km midstream oil pipeline in June 2019, a USD 4bn equity transaction representing the first of its kind for a national infrastructure asset in the region. In Dubai, the landmark USD 2.9bn Route 2020 project, an extension of the Dubai Metro Red Line, reached financial close in March 2018.

Abu Dhabi is developing two smart cities, Masdar City and the Zayed Smart City. Launched in 2018, the latter is a five-year pilot initiative to upgrade infrastructure in the Corniche area of Abu Dhabi with artificial intelligence.

To further encourage foreign investment in its infrastructure plans, Dubai launched a PPP unit in September 2019. The new unit is expected to operate based on PPP best practices, leverage international expertise and efficiency, and will support the city's new strategic plans for 2019 to 2021.

On the energy side, Dubai's landmark phase four of the 950MW Mohammed bin Rashid Al Maktoum solar park reached financial close in March 2019, raising USD 2.5bn. Phase five tenders launched shortly afterwards in June 2019.

21 Saudi Arabia
Early 2019 began with the announcement of a USD 425bn boost to Saudi Arabia's Vision 2030 infrastructure plans including considerations for new and refurbished airports, additional railways and industrial projects.

In June 2019, a new airport servicing Saudi Arabia's smart city development Neom – a city that will be powered by 100% renewables – was inaugurated for commercial flights. Neom Bay is the first airport supported by a 5G network in the Middle East.

The USD 16bn Haramain high-speed rail system connecting Mecca and Medina was inaugurated in 2018 and the landmark Riyadh Metro project is over 70% complete.

Given the scarcity of freshwater resources in the country, desalination is set to remain the most active sector, with tenders launched in April 2019 for the Yanuba desalination plant and May 2019 for the Jubail 3A and 3B reverse osmosis plants.

The kingdom possesses an attractive renewable energy market, having successfully closed multiple petrochemical, onshore wind and solar deals since 2017, with an additional 4.5GW solar pipeline that includes the 2.5GW Mecca solar farm.

The increasing openness to international private participation and improved political stability have improved Saudi Arabia's score in the Index from 2017. Saudi Arabia's anticipated Private Sector Participation law is set to unlock further opportunities for foreign investors.

34 Oman
Oman has a strong track record of completing infrastructure projects and investor confidence is set to be further boosted by the recently approved PPP law, bringing forth even more lucrative opportunities.
By October, 38 PPP projects under consideration – spanning education, healthcare and transport – were unveiled in the country's first national PPP forum.

A flurry of deals have concluded over the past five years, especially in desalination. The USD 114m Sharqiyah desalination plant was the latest to reach financial close, in May 2019. Meanwhile in July 2019, the Oman Power and Water Procurement Company issued an RFQ for the 500MW Manah Solar I, the first phase of a 1.1GW development.

35 Kuwait
In 2018, Kuwait's GDP grew 2.3% due to increased non-oil revenues and government spending, according to the World Economic Outlook 2019. Construction on Kuwait's USD 4bn smart city, South Saad Al Abdullah, commenced in 2019. In 2018, Kuwait's USD 4.2bn International Airport reached financial close. Once completed, it will handle 25 million passengers per year.

38 Turkey
Political instability and currency volatility have taken their toll on Turkey's infrastructure market, heavily impacting its economic status score which dropped from 22.89% in 2017 to 17.02% in 2019. However, confidence in Turkey is being maintained by export credit agencies covering commercial and political risks.

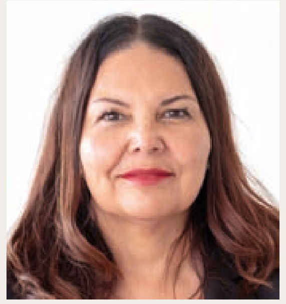
42 Qatar
Despite diplomatic tensions with the rest of the Gulf Cooperation Council, Qatar's economy has proved resilient. Qatar has turned to PPPs to tackle its budgetary constraints, especially in social infrastructure. In March 2019, the government unveiled a USD 13bn pilot PPP scheme for 45 schools to be delivered in six phases over the next five years.

Qatar launched a tender for the 500MW Al Kharsaah solar PV project in 2018 which it plans to award as a 25-year PPP contract. The USD 500m project attracted 16 international industry heavyweights such as Engie, Mitsui & Co. and Korea Electric Power Corporation amongst others. Agreements and grid connection are expected to be completed by 2020.

Due to host the 2022 FIFA World Cup, Qatar is also forging ahead with its USD 45bn Lusail Smart City, scheduled for completion by the end of 2019.

50 Iran
The reimposition of US sanctions in November 2018 partially suspended Iran's railway programme and discouraged international investors.

Interview: Ras Al Khaimah Waste Management Agency



Sonia Ytuarte Nasser
Executive Director

Ras Al Khaimah Waste Management Agency (RAKWMA) is part of the UAE's public services department tasked with meeting the UAE Vision 2021 target of 75% diversion from landfill.

It manages the waste for a population around 400,000 and it is a "one-stop-shop" for the regulatory, planning, collection, treatment and disposal needs of the government. However, as a utility it has reached a tipping point in meeting the UAE's waste diversion target. RAKWMA has been working with CMS Middle East on customising civic contracts for various types of infrastructure projects to help meet its targets.

"We're very small and lean but at the same time we have a lot of government mandates. There's a role for government and then there's a role for private industry," says Nasser.

"That's why this year we have started exploring options with the Ras Al Khaimah Economic Zone, whose job is to go out and get investors," she continues.

Next round of PPPs

PPPs in the UAE's waste sector began in 2009 with two wastewater treatment plants in Abu Dhabi developed by BESIX and Veolia: the 300,000m^3 capacity per day Al Wathba 2 plant and the 130,000m^3 capacity per day Allahmah plant near the city of Al Ain. These projects set the standard for future PPPs.

According to Nasser, while plans are still at an exploratory stage, projects are likely to be tendered for the Ras Al Khaimah Economic Zone with a preference for "design, build, finance, maintain contracts because our hiring process for operating these facilities is very difficult within government. We are exploring PPPs with different entities and looking to see if they can do it more efficiently than us."

Vision 2035: the circular economy

Vision 2035 will prioritise a circular economy strategy as well as a zero-waste-to-landfill target according to Nasser. This means various forms of energy-from-waste are on the table. The UAE is in a rush to establish leadership in environmental sustainability and to achieve this RAKWMA, as well as other emirate agencies, see the private sector as a key partner.

"We're really focused on creating alternative fuels, for example solid refuse fuel," says Nasser.

"We have started doing pilot projects with the cement factories here, namely Gulf Cement, where we're sending all our camel waste because of its high calorific value," she continues.

A circular economy has already been developed for glass from the 33 hotels situated in the area. Collected glass is transported to Dubai to be processed and the cutlets are returned to glass manufacturer Saverglass in Ras Al Khaimah.

RAKWMA is confident in its control of feedstock as well as its regulatory capacity to protect investments, so the agency is now seeking waste processors interested in setting up a variety of facilities. These could include a solid refuse fuel plant, lead acid recycling plant and other specialised waste streams such as diaper recycling.

Interview: Finergreen

Antoine Poussard
Managing Partner – MENA

Finergreen is a financial advisory boutique specialising in renewables and energy efficiency projects.

Renewable energy is fast becoming a core part of Middle Eastern countries' strategy to diversify away from fossil fuels, creating a promising growth opportunity for the renewable industry.

"Governments have understood that shifting from a pure oil-driven economy to an energy mix comprising renewables makes more economic sense," Poussard states.

Nonetheless, not all the countries in the region are moving at the same pace, as the impact of reducing subsidies is different in the context of each local economy.

"Removing oil subsidies for local consumption can heavily impact consumers' appetite, and this can have a negative effect in economic growth," Poussard adds.

In terms of ambition, Saudi Arabia is stealing the thunder by setting a target of 58.7GW of renewables by 2030.

"Many developers are attempting to position themselves in Saudi Arabia, but the environment is a bit more challenging," Poussard says, citing delays in the development process.

Challenges

Despite initial ambition, a few countries are slowing down renewables deployment for technical reasons. For example, auctions and new licenses have been suspended in Jordan until the Jordanian government has assessed the capabilities of its power network.

"In Lebanon, among other events, the current political situation has resulted in tenders being on a standstill," Poussard says.

"However, energy and infrastructure are still core priorities, and governments are working hard to keep up the pace of development."

Aggressive competition in the bidding process is another challenge players will need to take into consideration, especially when it comes to solar developments.

In October 2019, a record-low bid led by Saudi developer ACWA Power was reportedly submitted for the Dubai Electricity and Water Authority's tender for the fifth phase of the landmark Mohammed bin Rashid Al Maktoum Solar.

The 900MW solar tender allegedly attracted a bid of US$16.953 per MWh.

"There is less appetite from second-tier IPPs in the medium-term,"

"Even top tier players will be more cautious and selective in the tender they decide to participate in," Poussard adds.

Contrary to solar tenders, in which there is less room for innovation and technology cost reductions are subject to the race for economies of scale, wind tenders have more room for added value and technical improvements to achieve better pricing.

Distributed renewables: the opportunity in disguise

"The commercial & industrial (C&I) market is booming, and is offering alternative opportunities for smaller developers," Poussard says.

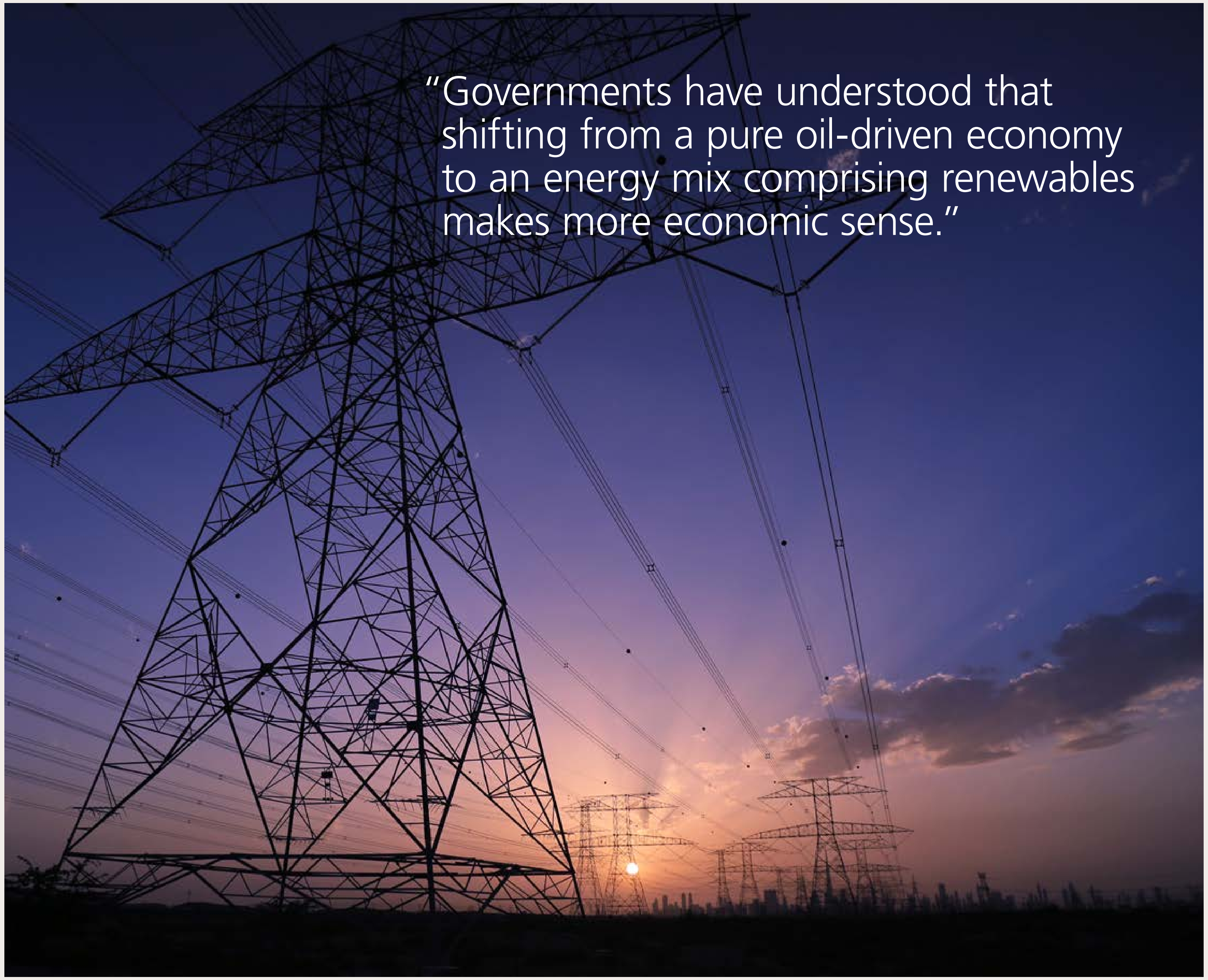
For example, Dubai Electricity & Water Authority (DEWA) has launched the Shams Dubai initiative, which aims to deploy solar energy in buildings, as part of the Distributed Renewable Resources Generation programme to support its ambitions to make Duai a landmark smart city.

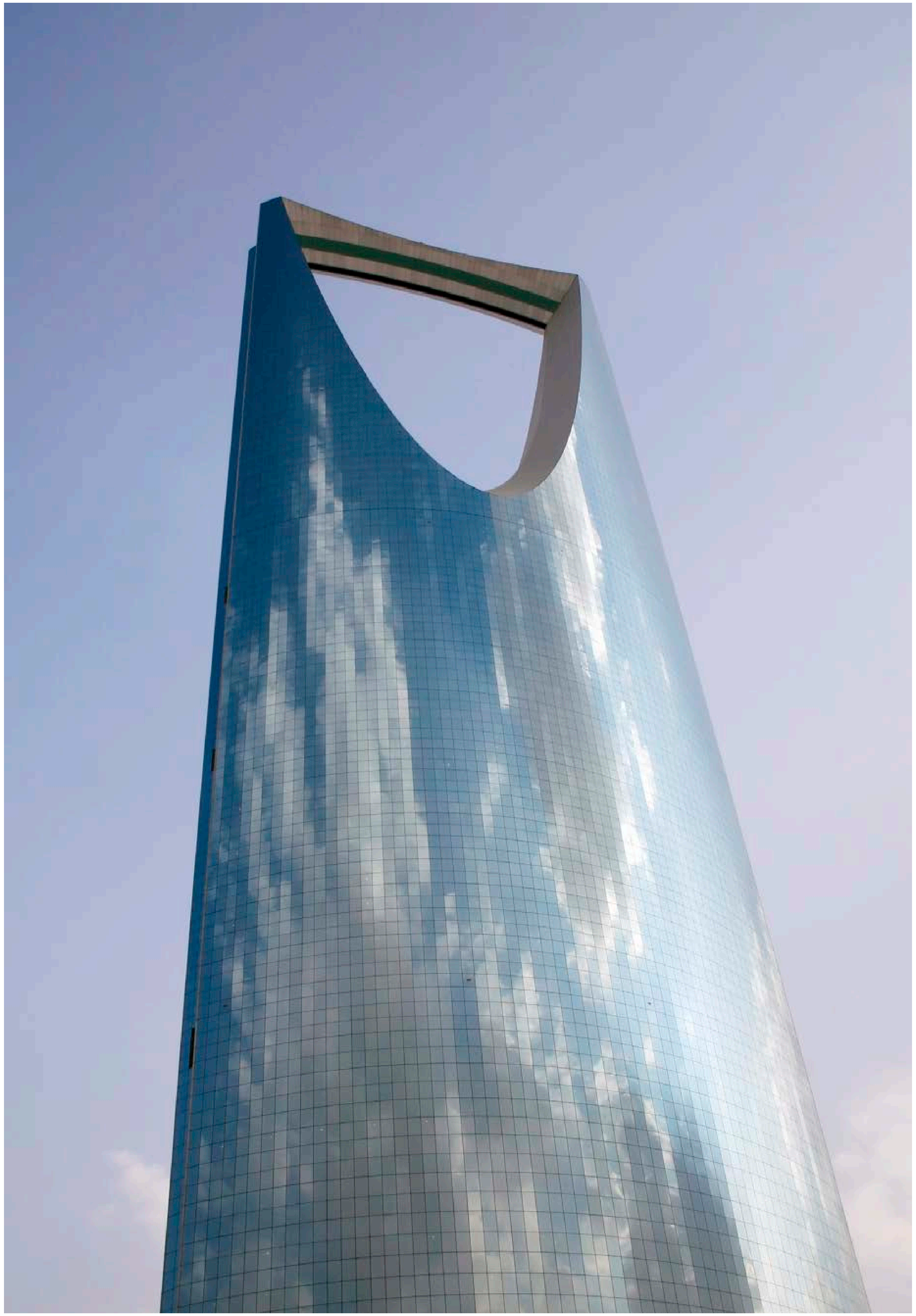
"Large-scale projects are at the forefront because of their size, but there is a lot of appetite for distributed solar, spanning from private-wire PPAs to rooftop solar projects for big factories," he adds.

More than 125MW of solar capacity has been added so far under the Shams net metering programme since its 2014 launch, and the programme is gaining momentum.

For example, in September 2019, Nestlé inaugurated the UAE's largest ground-mounted private solar PV facility of 5.5MW alongside its Al Maha factory in Dubai.

Port operator DP World is developing 20MW solar PV on rooftop and carpark premises, boasting the largest rooftop PV project in Middle East.





Case study: Neom, a new future

Led by the pivotal Vision 2030 programme, Saudi Arabia is pushing the boundaries of technology advancements with Neom, a smart city.

Since its reveal in 2016, Vision 2030 – the economic diversification masterplan pioneered by Crown Prince Mohammad bin Salman – has spurred investor interest towards landmark infrastructure and energy deals in Saudi Arabia. By 2017 the vision had evolved to include Neom, a 26,500km² mega-smart city development.

Saudi Arabia expects Neom to generate

USD 100bn

in total GDP by 2030.

From connected infrastructure to smart buildings and mobility, the smart city concept is hailed as a solution to rapid urbanisation whilst simultaneously improving economic and social potential. By aligning digital transformation and sustainability with its Vision 2030 plans, Saudi Arabia expects Neom to generate USD 100bn in total GDP by 2030. Neom will be powered 100% by renewable energy and governed by an independent judicial system to encourage investment towards 16 priority industries, including advanced manufacturing, mobility and biotech.

According to official announcements in 2017, Saudi Arabia's Public Investment Fund (PIF) and a mix of investors have committed over USD 500bn. A privatisation programme will also be implemented.

Construction on the first urban area, Neom Bay, began in Q1 2019, with named contractors including the Saudi Binladin Group and AECOM.

Preparations for phase two, an industrial city, have already begun. Seven bids from foreign firms have been invited to assess the best proposal for executing the development.

Champions of the water industry

The Neom coastline stretches 468km along the Gulf of Aqaba and the Red Sea. The vast supply of seawater will be used to fuel Saudi Arabia's thriving desalination industry and attract the latest water technology to Neom.

Mobility

Neom will house disruptive solutions for transport, particularly providing an enabling environment for automated driving and drones.

In June 2019, the Neom Bay Airport, located in the northern region of Sharma, was inaugurated for commercial flights and is the first 5G network-supported airport in the Middle East.

Contracts for the King Salman Bridge – a 32km causeway linking Saudi Arabia's Tabuk to Sharm El-Sheikh in Egypt – were awarded to developers Arup Group, WSP and Fugro. The bridge will not only serve Neom but also directly connect the Middle East to Africa.

Saudi Arabia's Public Investment Fund and a mix of investors are due to invest over

USD 500bn

Prevalent PPP

200+ PPP projects in Canada and pipeline remains strong

EV bolsters suppliers

Chile's copper industry has a huge opportunity amid global EV uptake

Connecting continents

46,800km of sub-sea cables involved in LatAm's mega interconnectivity projects

Plentiful Peru

51 PPP projects are in the pipeline in Peru including high-speed broadband tenders

US embraces PPAs

Renewables sector dominates global corporate PPA deal flows with US leading the way

Key asset classes

4G/ 5G, solar PV, subsea cables, electricity interconnectors, data centres

Americas:
LatAm leads innovation

Canada dominates PPP activity while infrastructure opportunities are on the rise in the US. In LatAm, the spotlight is on digital and electricity interconnectivity.

5	Canada
7	United States
20	Chile
26	Colombia
27	Mexico
32	Peru
45	Brazil

Digital interconnectivity
Mega interconnectivity projects in LatAm are creating the digital infrastructure of the future. Grupo Gtd, a Chilean telecommunications company, is installing a 3,500km-long submarine fibre optic network from the north to the south of Chile. The new digital connectivity will allow further investment to exploit the country as a gateway to Colombia and Peru, allowing tech companies to expand their operations in the country.

In April 2019, Google completed a 10,000km subsea cable connecting California to Chile.

On the other side of the continent, Brazil is working on the innovative 9,300km EllaLink subsea cable system aiming to link Brazil with Portugal and Spain. In May 2018, equity fund Marguerite joined the project as a financial sponsor. The project constitutes the first transatlantic system connecting Europe and Latin America without having to go through the US.

The project constitutes the first transatlantic system connecting Europe and Latin America without having to go through the US.

In July 2019, Chile also advanced its plans to develop a 24,000km fibre optic cable to connect South America with Asia Pacific – Argentina, Brazil and Ecuador have expressed an interest in participating after a USD 3m feasibility study agreement with the Development Bank of Latin America.

Country summaries

5 Canada

Canada has proactively maintained its attraction for private and institutional investors through its strong PPP procurement activity which continued apace during 2019. Although the focus is largely on traditional infrastructure, and most specifically transport, opportunities in social infrastructure PPPs remain abundant.

In May 2019, a consortium led by Canadian construction company Aecon reached financial close on the Highway 401 PPP in Ontario after raising CAD 639.8m. In June 2019, the government of British Columbia pre-qualified three bidders for its CAD 2.83bn Broadway Subway PPP, a 5.7-kilometre extension of Vancouver's Millennium Line.

In June 2019, not-for-profit care provider Providence Health Care issued a request for qualifications for the first phase of a new CAD 1.9bn hospital campus in Vancouver.

The Canadian PPP market has been robust for more than 15 years, with authorities having procured more than 200 PPP projects. The scale of greenfield development is also having knock-on effects in the secondary market. In February 2019, Toronto-based Fiera Infrastructure acquired a majority shareholding in contractor EllisDon's 10-strong portfolio of transportation and social infrastructure PPPs.

7 United States

Amid revived determination at both federal and state level to address the country's ageing infrastructure, all eyes are on the strategy used to improve the situation. In April 2019, President Trump announced an agreement with Congress to pursue a USD 3trn investment in infrastructure to improve the country's highways, railways, bridges and broadband. However, discussions with the US government on this issue have once again come to a halt.

PPPs have made some notable appearances. In June 2019, the state of Maryland approved a USD 11bn road PPP scheme, praised as the largest highway PPP in the world. The project entails the upgrade of 70 miles of the interstate highway on the Capital Beltway encircling Washington, DC, widening existing lanes and adding new ones. Whilst investment in transport is welcome, the sector is changing in other ways. Mobility is firmly in the crosshairs of disruptive, app-based services – including ridesharing, car-sharing and last-mile services such as e-scooters – which are gaining popularity among commuters.

The country's renewables sector leads on the adoption of corporate PPAs, with the likes of Facebook, Microsoft and Starbucks having dominated the 2019 deal flow. In one such deal, Enel Green Power signed a 12-year PPA with food and beverage giant Mondelez in July 2019.

20 Chile

Despite positive developments in the country, Chile fell from the 11th position in 2017 to 20th in 2019, due to deterioration in economic measurements, tax environment, political stability and private participation.

Commodity prices have a wide impact on the region's economic growth. Chile's economy is significantly dependent on the export of metals (most importantly copper) – an industry worth USD 31.5bn a year which represents 10% of the national economy. China is the country's major trade partner, making Chile significantly dependent on China's growth.

This effect was apparent in the PPA deal flow of Chile, the most mature PPA market in Latin America which has attracted, among others, technology and telecommunication giants and the mining sector. As the availability of PPA off-takers is dependent on the economy's conditions, a drop in commodity prices over 2018 led to a slowdown of PPA activity in 2019.

In 2019, the Chilean government announced the Chile Sobre Rieles – a USD 5bn investment programme in the country's railway network – and a USD 7bn road infrastructure plan.

26 Colombia

Colombia's score improved from 2017's index thanks to steep differences in ease of doing business (53.96% up to 79.58%) and its tax environment (50.64% to 80.40%) indices. The country's attractiveness is still scarred by the 2016 Odebrecht corruption scandal surrounding the cancellation of the Ruta Del Sol 2 highway concession but, thanks to the fourth generation (4G) toll road tender programme launched in 2016, it is slowly recovering. The latest 4G project to close was the USD 594m Pasto Rumichaca road PPP in July 2019, after being awarded to Sacyr and Herdoiza Crespo Construcciones.

In July 2019, the country put in place new rules for its renewable energy auctions to deliver 4.3GW of solar capacity, after the first attempt failed due to a lack of competitive conditions.

27 Mexico

Mexico's president, Andrés Manuel López Obrador, has had surge of high ambitions as well as daring reshuffles to the country's infrastructure plans, including the controversial cancellation of the USD 13bn Texcoco airport in October 2018. On the other hand, Mexico's renewables market has enjoyed an upward trend in terms of deal flow, adding approximately 800MW of additional capacity in 2019 from solar PV and onshore wind procurements.

In July 2019, finance minister Arturo Herrera announced a stimulus package of USD 25bn to boost private investment in infrastructure.

32 Peru

Peru is evaluating the feasibility of an electricity interconnector, with the support of the Inter-American Development Bank, with the possibility of Argentina becoming involved. The project – connecting Arica in Northern Chile and Tacna in the south of Peru – is anticipated to provide flexibility to the region's transmission systems and facilitate the addition of further renewables capacity. In May 2019, the two governments reviewed the latest economic and technical updates of the feasibility study.

Peru garnered a lot of interest in 2019 with its high-speed broadband PPP tenders. Six concessions were awarded in January; four to a Yachay Telecomunicaciones, Yangtze Optical Fibre and Cable Company consortium, and two to a consortium featuring DHMONT, Telkom and Bantel.

Peru's PPP authority, Proinversion, has a pipeline of 51 projects while also considering adding three new ones for the period up to 2022.

45 Brazil

The country's corruption scandals around state-owned oil company Petrobras have affected the country's business environment. President Bolsonaro's announcement of Petrobras' privatisation, as part of a wide range of privatisations aiming at reducing corruption and the state's debt, has been well received by the business community. According to public statements, approximately USD 20bn of assets have been privatised since the new president took office in January 2019, including the offload of USD 12bn of Petrobras' assets.

In March 2019, Petrobras handed over majority control of gas distribution network Transportadora Associada de Gas (TAG) to France's Engie and Canada's CDPQ in a USD 8.7bn deal. The transaction was completed following a landmark ruling from the Brazilian supreme court allowing the sale of subsidiaries of state-owned companies without congressional approval.

Interview: Grupo Indi

Diana Muñozcano
Chief Investment Officer

Despite recent political uncertainty, Mexico's infrastructure sector shows signs of strength, says Grupo Indi's Chief Investment Officer, Diana Muñozcano.

The infrastructure sector in Mexico has seen an important evolution in the past decade. An increasing number of small companies have been able to access more contracts with longer and improved terms.

Not many new players have entered the fray, however. At the federal levels, the same companies tend to compete for contracts. This is largely due to the high sophistication of contracts, more stringent capital requirements on aspects such as debt financing and how capital is contributed.

At more local levels, there is more leeway for new entrants, says Muñozcano. "I do think that at the state and municipal level we are starting to see new players. These are companies who've been able to stabilise their business and companies that have grown to be medium-to-large with more stable cashflows."

Generally speaking, Mexican government policy towards infrastructure is leaning towards brownfield rehabilitation and maintenance PPP projects, particularly in the road sector.

In the short term, there will be few new-build greenfield road projects. The relatively low levels of traffic make them unsuitable as toll concessions and hard to justify as availability-based contracts. If there are projects, they will probably be in the north of the country.

Brownfield works do not create a great opening for new entrants but, given that this a new government, and new governments in Mexico tend to be followed by economic deceleration, it is good that a brownfield drive is being pursued to drive the sector in the short term.

"Going forward, the important thing is that investment starts to flow and that money is spent on infrastructure, so the recent infrastructure PPP plans give a lot of confidence," says Muñozcano.

Reason for optimism in Mexican infrastructure

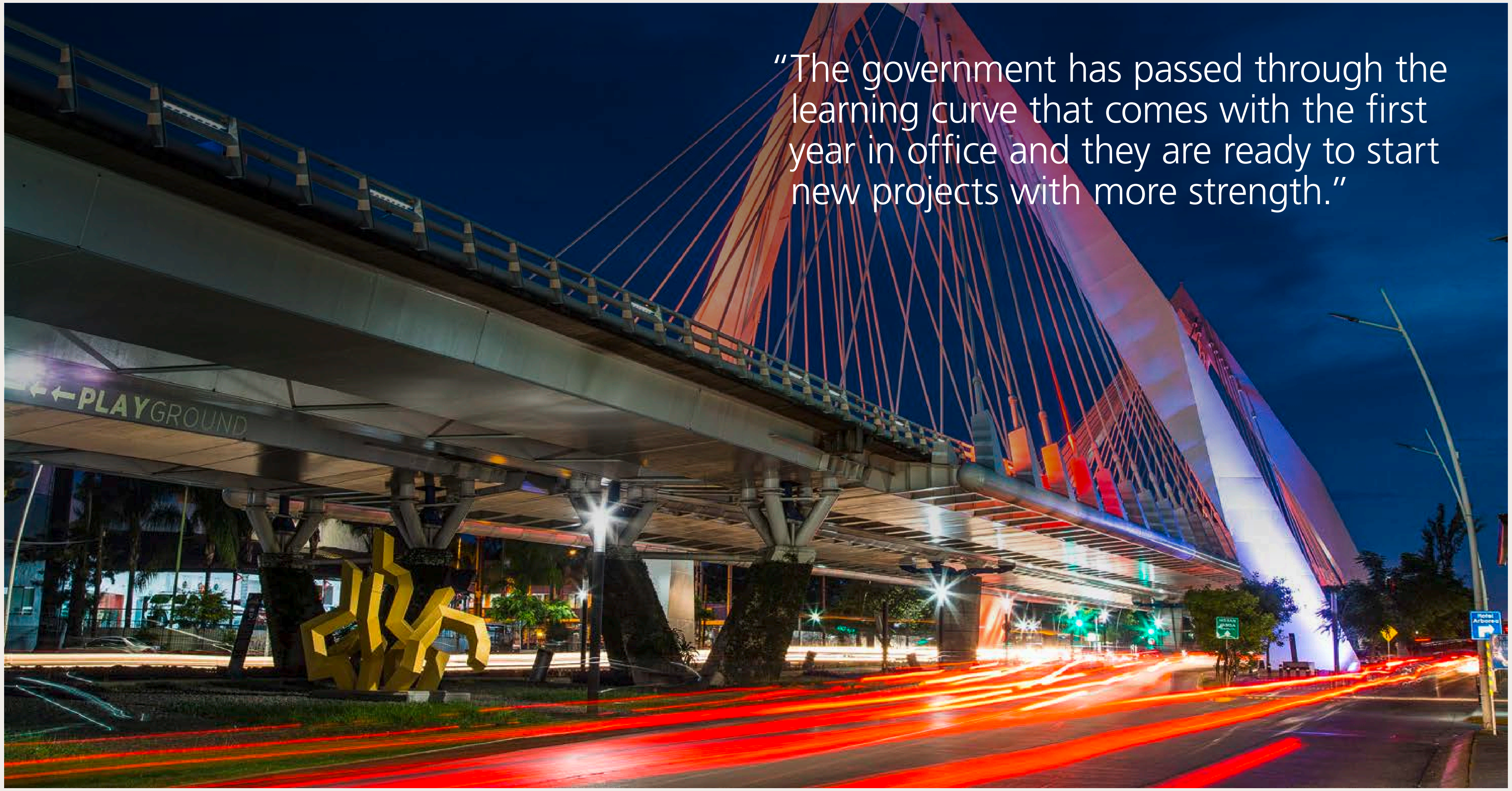
In the past year, the government has prompted serious concerns after cancelling a new airport project and a renewables auction. However, the real impact of the airport cancellation was not as severe as widely perceived due to the legal process through which it was carried out and the fact that contracts were generally honoured.

"The government has passed through the learning curve that comes with the first year in office and they are ready to start new projects with more strength," says Muñozcano.

Banks in Mexico find themselves with high levels of liquidity and are consequently on the lookout for existing assets to refinance and monetise, as well as waiting on the sidelines for new projects.

Investors, for their part, are also ready and waiting to deploy capital despite macroeconomic decelerations.

Muñozcano says, "We're also seeing many contracts on the horizon in the maritime and port sector which is a very important one for Grupo Indi."



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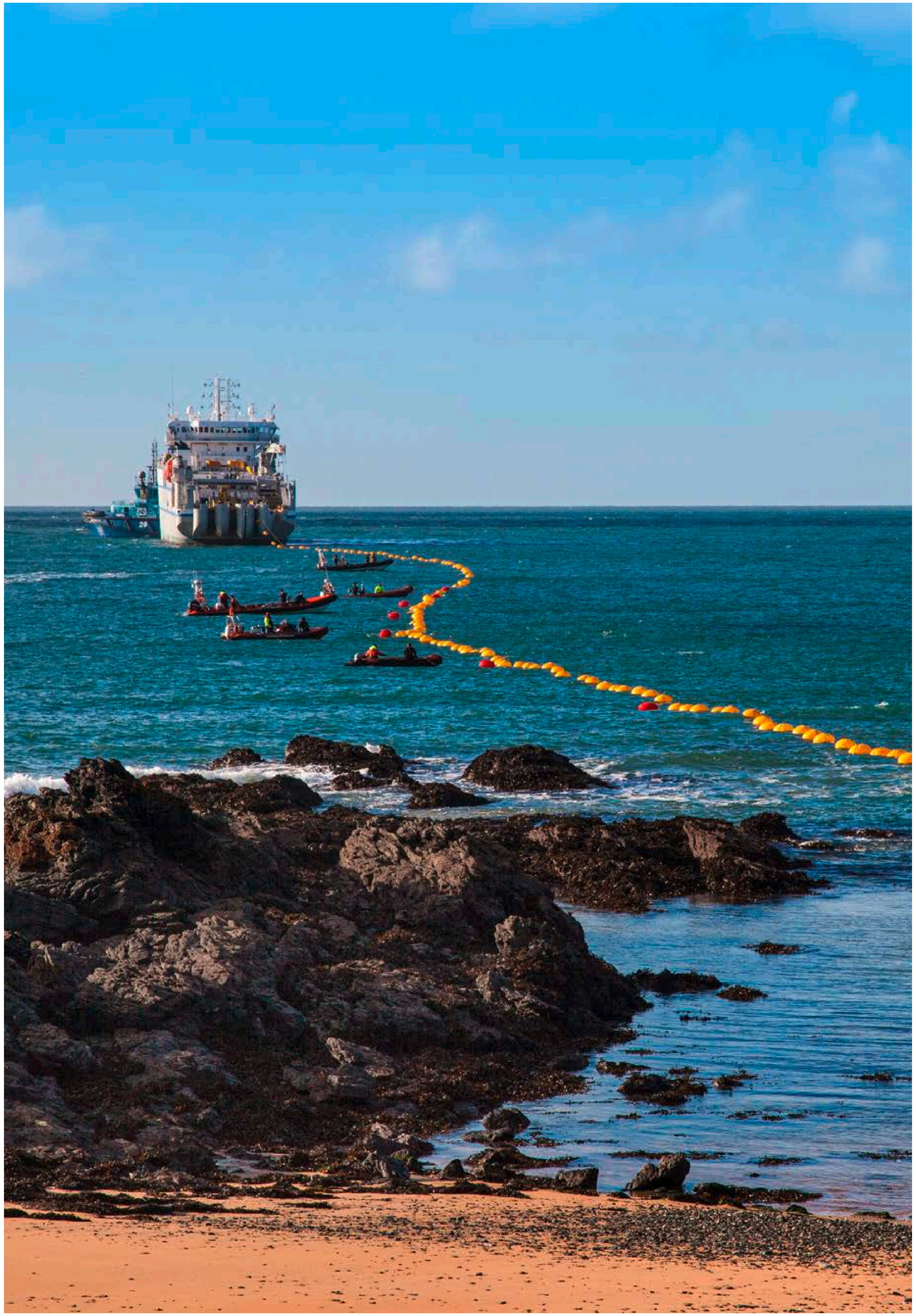


Case study: EllaLink: breaking the status quo

Large fibre optic projects were typically the preserve of tech giants but European equity fund Marguerite II broke the mould by sponsoring the cross-continental EllaLink submarine cable network.

EllaLink was first conceived in 2012 as a next-generation submarine cable route spanning 10,000km of the Atlantic Ocean floor bed, linking the Brazilian cities of São Paulo and Fortaleza with Lisbon, Portugal.

The Marguerite II Infrastructure Fund stepped in as an equity investor in May 2018, a landmark venture considering that global internet infrastructure is dominated by a handful of US, mostly tech, companies. By January 2019, Marguerite reached financial close on the EUR 150m project.

The cost of financing is, in part, being sourced from pre-payments made by anchor tenants, including Building the Europe Link, with Latin America consortium (BELLA) – comprising regional data networks GÉANT, RedCLARA and the Latin America National Research and Education Networks – Cape Verde Telecoms and the Madeira Electricity Company.

BELLA, one of the anchor tenants, is an EU-funded programme providing long-term interconnectivity between Europe and Latin America. Since their interconnection in 2003, shareholders GÉANT and RedCLARA have seen connection speeds between the two continents grow by 1,600%. However, greater flow of data is restricted by the limited capacity of existing and indirect interconnector routes.

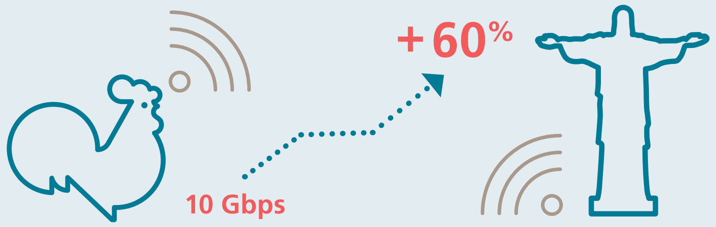
Subsea routes between Europe and Latin America have typically depended on connections to North America. The EllaLink system will bypass North America with its direct connection providing significantly lower latency (essentially the delay in the transmission of data) than existing routes.

connection speed

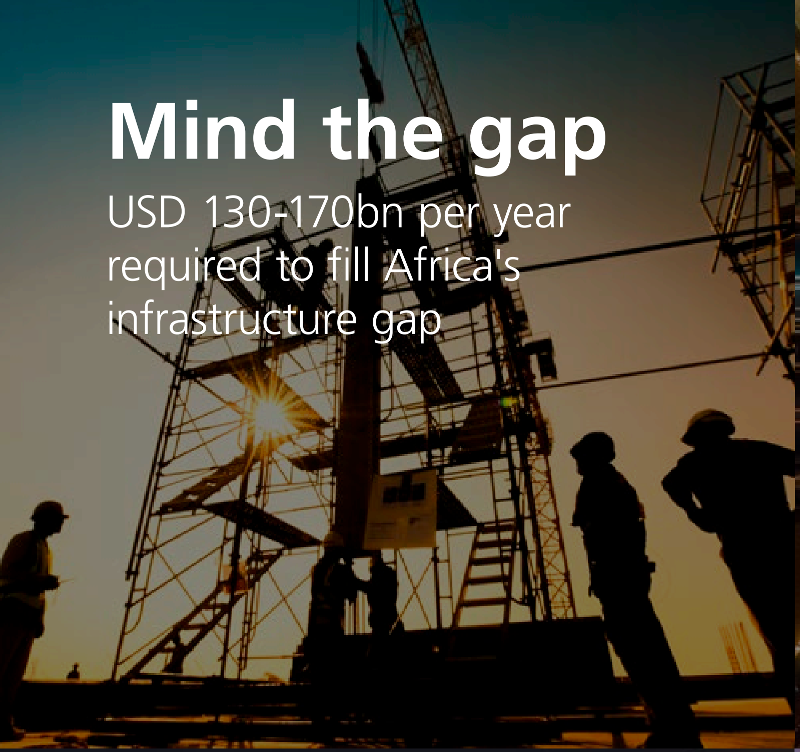
+1,600%
since 2003

Connection speeds between Europe and Latin America have grown by 1,600% since 2003 but are restricted by current interconnectors.

Plans for the system include an additional branch route connecting to French Guyana, the CariLink system connecting French Guyana and Columbia, and branches to Africa via Cape Verde and Mauritania.



Broadband connection speeds between Europe and Latin America have grown significantly to 10 Gbps in 2018 but, once operational, EllaLink will improve speeds by 60%.



Africa:
Trade ambitions boost interconnectivity

Fiscal constraints may hinder ambitions but African governments are opening their doors to greater private investment to overcome their infrastructure deficits.

36	South Africa
43	Morocco
49	Algeria

In July 2019, the launch of the African Continental Free Trade Area (AfCFTA) – the largest in the world – demonstrated a rising intergovernmental commitment to bolster the continent's economic potential. If political and existing regional trade obstacles can be overcome, AfCFTA is set to attract large investment in critical trade and telecommunications infrastructure to enhance interconnection as the continent embraces digitalisation.

Eastern Africa stands out

The eastern region was already producing standouts prior to the launch of AfCFTA. In a 2018 World Economic Forum, Kenyan President Uhura Kenyatta announced ambitions to move Kenya's installed renewable energy capacity from 70% to 100% by 2020. This target is well on its way largely due to the 310MW Lake Turkana wind farm, which was connected to the national grid via the new USD 271m Loiyangalani-Suswa power transmission line in December 2018.

Strong political will and regulation have also made Ethiopia an attractive destination for investors. Securing energy to meet its growth needs has been a top priority for the country, which, with the support of World Bank-backed programme Scaling Solar, is currently implementing a 1GW pipeline of solar PV tenders.

Enhancing digital infrastructure

A growing asset class across the region is telecommunications, with strategies to improve internet penetration being explored. Ethiopia is in the process of privatising its state monopoly, Ethio Telecom, and the island country Cape Verde is to be linked to the landmark EUR 150m EllaLink subsea cable project connecting South America with Europe.

AfCFTA, demonstrated a rising intergovernmental commitment to bolster the continent's economic potential.

Across the continent, the construction of large assets has mainly been driven by China's Belt and Road Initiative (BRI). However, China is facing increasing competition from French, UK and Japanese government-backed investors to develop projects in Kenya, Ghana and Ethiopia.

Country summaries

36 South Africa
Despite a long stretch of relatively sluggish growth, South Africa still ranks as the continent's most favourable environment for private investment. The solvency crisis of state-owned utility Eskom disrupted South Africa's pioneering Renewable Energy Independent Power Producer Procurement programme for up to three years but, in 2018, 20 onshore wind and solar PPAs were finally signed.

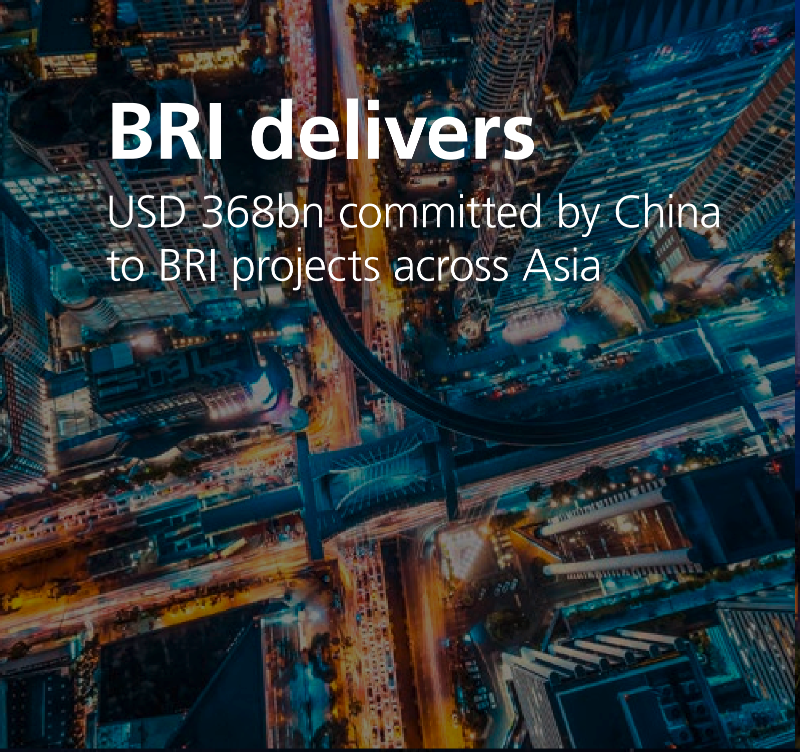
To prevent further disruptions to greenfield projects, the government plans to unbundle Eskom into separate generation, transmission and distribution arms. In 2018, the UK government invested USD 500m to develop the country's energy storage market, and by September 2019, Eskom had unveiled plans to launch a 360MW battery tender – the first tender of its kind in Africa.

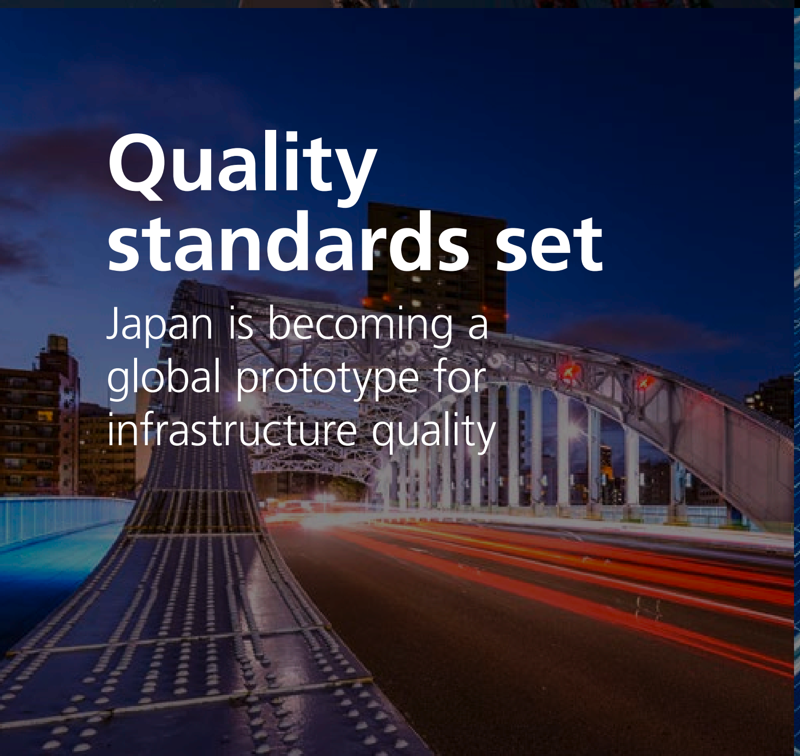
43 Morocco
Backed by strong performance in the Infrastructure Index across its economic and political stability scores, Morocco has ambitions to be the leading infrastructure and energy hub on the continent.

Flagship projects include the 2018-inaugurated Al-Boraq high-speed rail line connecting Casablanca and Tangier and, more recently, the third phase of the Tanger Med 2 port in Tangiers in June 2019. Future opportunities are set to emerge in special economic zones in northern Morocco. In 2017, the Moroccan Agency for Sustainable Energy successfully implemented the landmark 177MW Noor PV project. It is tendering several projects including phase two of the 800MW Noor Midelt concentrated solar power plant launched in July 2019.

48 Algeria
Algeria's outlook for infrastructure opportunities is very positive, as it begins to see results from its 2015 USD 7.8bn five-year transport expansion programme, boasting a pipeline of seaports, rail and airports.

Developed by an Alstom-led consortium, the second phase of the 10.3km Constantine light rail line extension was inaugurated in July 2019. In 2019, projects such as Algiers Metro extensions and phase one of the Sétif tram network were completed.





Asia Pacific:
Securing digital transformation leadership

Investment in digital infrastructure is on a general upswing in the Asia Pacific region with countries such as Singapore and South Korea leading the way.

Regional leaders, such as Japan, China, South Korea and Singapore, are vying for supremacy in the communications sector. The numerous digital infrastructure investment opportunities are backed up by strong regulatory frameworks and swift development capabilities in these countries.

Whilst China, Japan, South Korea and Singapore are among the global 5G frontrunners, some other Asian countries are still struggling with their 4G roll-outs.

Belt and Road Initiative forging ahead?

A multibillion-dollar network of projects launched in October 2013 by Chinese President Xi Jinping, the China-backed Belt and Road Initiative (BRI) aims to build comprehensive terrestrial, maritime and digital routes connecting the East with the West.

Perceived as the playground of China's state-owned enterprises, due to some high-risk large infrastructure projects, the BRI has driven substantial investment in the APAC region.

The increasing emphasis on greening the BRI is contributing to the success of several renewable energy projects as APAC investors are keen to tout their ESG credentials.

Multiple solar and wind generation schemes are already operational under the BRI, such as Pakistan's 1GW Quaid-e-Azam solar park, the 99MW Jhimpir wind farm and the 49.5MW Dawood wind project in Pakistan, with more expected to come to the market over the next few years.

Renewables are a game changer for Asian-Pacific economies

Renewables auctions, tax incentives and feed-in tariffs are increasingly being deployed across the region. The promising development prospects of offshore wind projects in Taiwan enabled global investors, such as Macquarie, JERA and Ørsted, to take projects like the 128MW Formosa 1 and 376MW Formosa 2 plants to financial close in 2018.

Floating wind and solar are also prominent draws for investors in the region, with Korea's 200MW Donghae floating wind farm project to be developed by Equinor, Korea National Oil Corporation and Korea East-West Power by 2024.

3	Singapore
4	Australia
14	Japan
16	South Korea
17	Hong Kong
18	China
25	Malaysia
29	India
30	Thailand
33	Indonesia
37	Kazakhstan
40	Philippines
44	Vietnam
47	Cambodia
48	Bangladesh

Country summaries

3 Singapore

One of the world's most competitive economies as well as a thriving financial hub, Singapore jumps up three places from the 2017 CMS Infrastructure Index to third, overtaking Australia, Canada and the United Kingdom.

In addition to the highly favourable tax environment, robust political framework and macroeconomic landscape, Singapore has become Asia's data centre hotspot, thanks to an unprecedented growth in the digital infrastructure sector including 5G, broadband, IoT and cloud computing.

On 26 June 2019, Singapore's Ministry of Communications and Information announced the opening of Digital Industry Singapore, an entity set up to guide investments in digital infrastructure, allowing close collaboration with the private sector through PPP models.

An upcoming pipeline of approximately 178MW of new data centres is expected between 2019 and 2021. Demand is mainly driven by record requirements from large technology and cloud companies.

Some of the most noteworthy traditional infrastructure projects in the pipeline are the USD 11bn Singapore – Kuala Lumpur high speed rail line and the second phase of the deep tunnel sewerage system which has its centralised collection and treatment points in Changi, Kranji and Tuas and is expected to cost approximately USD 9.6bn.

Another mega project is the USD 10bn Changi International Airport Terminal 5, which is also the biggest expansion of the airport to date. Completion of the project is scheduled for the 2030s.

Singapore Tuas megaport also represents a bold investment. The first phase – whose total costs are estimated at USD 1.8bn – is expected to become operational in 2021. Another three phases will be necessary to develop the port, which will be fully operational from 2040.

4 Australia

Ranked 4th globally, Australia is home to some of the world's largest infrastructure and energy investors, such as Macquarie and AMP Capital.

The Australian government continues to offer unwavering support and announced in 2019 that it will invest at least AUD 100bn in the transport infrastructure sector over the next 10 years.

14 Japan

Japan is well equipped to become a global prototype for infrastructure quality, already leading the way in deploying disaster and climate-resilient assets, including early warning systems.

The country kicked off the privatisation of multiple airports during the first half of 2018, with more opportunities to come to market in 2019 including the Hiroshima International Airport, Kitakyushu, Kagoshima and Nagasaki.

16 South Korea

Eager to invest in infrastructure and energy, South Korea is ranked 4th in the APAC region and 16th globally. A leading digital infrastructure market, the country deployed the world's first nationwide 5G network in April 2019.

South Korea is set to invest USD 26.2bn in sectors such as autonomous driving, smart cities and a digitalised healthcare system between 2019 and 2022, as announced by president Moon Jae-in in April 2019.

Considering the country's ambitious plans in the digital infrastructure sector and its strong performance in 2019, there is no surprise that South Korea ranks 16th in 2019.

17 Hong Kong

Ranked 5th in the APAC region and 17th globally, Hong Kong remains an attractive destination for investors, despite political tensions with Beijing. One of the most heated sector debates is over the 1,000 hectares of land to be created off Lantau island as a solution to tackle the territory's housing crisis. The artificial island is valued at HKD 624bn.

18 China

Only ranked 6th in the APAC region, China has ramped up investment in infrastructure in 2019 after a significant slowdown in late 2018. The country is expected to become Asia's infrastructure driving force and to continue its rise in the rankings in the next few years.

In comparison to the 2017 CMS Infrastructure Index, the 2019 version sees China's score increase substantially from 57.27 to 69.21 due to the improvement of private participation in the sector as well as increasingly favourable tax environment.

On 5 March 2019, the government committed to investing CNY 800bn in railway construction and CNY 1.8trn in road and waterway projects.

China is not only the leading and fastest growing 5G hub, due to major corporations such as Huawei and ZTE, but also one of the largest consumer markets worldwide. Substantial investment is expected in the sector with provincial authorities such as the Shenzhen city government already announcing plans to pay operators CNY 10,000bn for each stand-alone 5G base station.

While the China-US trade war escalates, a number of private foreign investors could benefit from the dispute, as the Chinese authorities reiterate their commitment to open the infrastructure and energy markets to foreign private capital.

For instance, a USD 35bn US-based private equity company, General Atlantic, announced in September 2019 that 10% of its current portfolio is comprised of Chinese assets including an investment in Hebei-based Asia Medical, a hospital operator and privately-owned healthcare services provider.

25 Malaysia

Malaysia's secondary market is flourishing, with the country's score also improving slightly from 59.50% in 2017 to 63.30% in 2019. One of the most noteworthy transactions of the year was the acquisition of the country's biggest toll expressway firm, PLUS Malaysia Bhd, by Asian private equity group RRJ Capital for USD 716.4m.

The country's most ambitious infrastructure project, the Kuala Lumpur-Singapore High Speed Rail project, was once again put on hold, for the next two years according to Malaysian public authorities.

29 India

On 25 September 2019, the Indian Prime Minister, Narendra Modi, announced the government's intention to spend USD 1.3trn on infrastructure over the next few years. Public authorities officially acknowledged the importance of private capital being invested in projects, with more privatisations expected.

Considering the increase in popularity of PPPs and the positive evolution of this financing model in India, opportunities for private capital deployment are expected in a number of sectors, not only railways, but also toll roads and airports, among other assets.

The country's score for ease of doing business leapt from 47.64 in 2017 to 72.92 in 2019 while private participation also from 53.75 in 2017 to 93.53 this time round. As India's opening up strategy pays off, the country has already attracted well-versed investors such as Vinci and Ardian.

30 Thailand

Thailand is readying for the swift deployment of an EV charging infrastructure as major automotive companies such as Toyota and Nissan eye the country's e-mobility market. The latter has already signed a contract with Taiwan-based manufacturer Delta Electronics to deploy charging systems for both home and public stations.

On 23 September 2019, the government of Thailand announced it will invest USD 557.3m into the Eastern Economic Corridor (EEC) in 2020 to speed up its development. The EEC is Thailand's most iconic mega project, aiming to develop the country's eastern provinces into a core ASEAN economic zone.

33 Indonesia

The country's scores for political stability, ease of doing business and private participation significantly improved between 2017 and 2019. The improvement is backed up by the country's ability to attract institutional investors including pension funds. In September 2019, Canada Pension Plan Investment Board made its first infrastructure investment in Indonesia, acquiring a 45% stake in toll road operator Cikopo-Palimanan, also known as Cipali.

In May 2019, the Indonesian government committed to an ambitious infrastructure plan, worth USD 412bn, including 25 new airports as well as new power plants. Roughly 40% of the total sum required will be provided by the government, with 25% coming from state-owned companies and the rest from the private sector. The transport infrastructure sector will be the beneficiary of 60% of the total investment.

37 Kazakhstan
Kazakhstan claims 37th place in 2019 due to a pivot towards greening its energy and transport sectors. In October 2019, the European Bank for Reconstruction and Development stated it would provide additional funds of up to USD 328m to support the deployment of renewable energy projects in the country.

In addition, in August 2019, 100 new electric buses were acquired to serve capital Nur-Sultan. In September 2018, Eurabus opened its e-bus manufacturing facility in Kazakhstan with the company expecting orders of 500 units in 2019.

40 Philippines
Bidding for a Chinese-funded railway project in the Philippines, under the Build, Build, Build infrastructure initiative, started in October 2019. The estimated project cost is USD 960m, with the 71km Subic-Clark railway due to be completed by 2022.

The Philippines dropped from its 29th place in 2017 to 40th in 2019 due to a substantial decrease in the country's ease of doing business score.

Multiple infrastructure projects have seen major delays, with the Subic-Clark railway being no exception, as one of the three shortlisted companies was disqualified by the Philippines government and bidding laws in the country require three bidders.

44 Vietnam
In October 2019, ADB announced it will finance Vietnam's first large-scale floating solar project, offering a USD 37m loan to Vietnam's Da Nhim-Ham Thuan-Da Mi (DHD), a subsidiary of national utility EVN.

The project will be built in southern Vietnam where DHD already operates its 175MW Da Mi hydropower plant.

47 Cambodia
A sewerage infrastructure project in Phnom Penh received a USD 26m grant from the Japanese government in October 2019. The funds will help build a wastewater treatment station, aiming to tackle some of the shortcomings of the country's current sewerage system and process water before its release into Choeung Ek lake.

48 Bangladesh
UAE-based investors committed USD 10bn towards the development of infrastructure in Bangladesh. According to the Asian Infrastructure Investment Bank, the country requires approximately USD 24bn of infrastructure investment to achieve its Vision 2021.

Interview: DNV GL

Jeremy Chun Chong Ong
Principal Consultant

With roots stretching back to 1864, the DNV GL Group is a technical advisor on renewable energy projects including the 50MW first-of-a-kind floating solar photovoltaic park at the Tengeh Reservoir in Singapore.

Having already advised on approximately 800MW of projects in the Asia Pacific (APAC) region, DNV GL combines strengths in solar and maritime energy so it can advise on floating technologies.

Across APAC, supportive government policies, such as the deployment of demo-plants and ambitious renewables targets, could propel the dissemination of floating solar technologies.

"There is definitely a huge interest in the APAC region. China and Japan are really leading in floating solar deployment, so is Taiwan and I think Vietnam has the potential to become the next market, as well as Thailand, Malaysia and Philippines."

50MW Tengeh floating solar

DNV GL was contracted by Public Utilities Board Singapore (PUB) in July 2019 as a technical advisor for south-east Asia's largest public tender for floating PV thus far. The project – located on Tengeh Reservoir – aims to diminish annual carbon dioxide emissions by 28,000 tonnes.

"What sets this project apart is that we are working on behalf of the energy off-taker, not on behalf of the developer. The pioneering feature of this PPA is that it requires the energy supplier to provide energy round the clock, which will require both conventional and renewable energy sources to power the off-site facilities owned by the off-taker," says Ong.

"The generated electricity will be delivered for the next 25 years, throughout the lifetime of the project."

Ensuring cost-effective installations

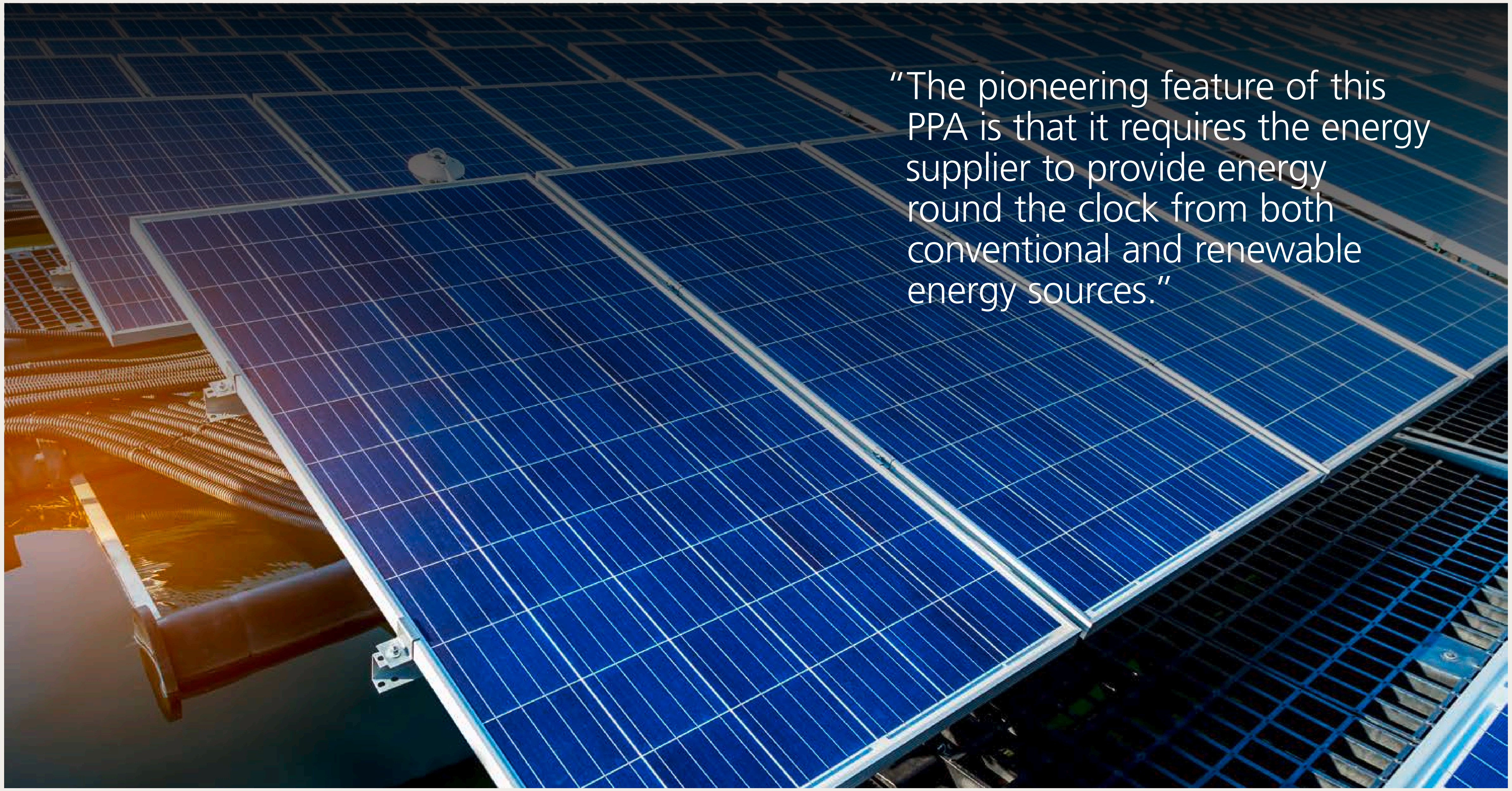
According to Ong, one of the major technical challenges is designing a large utility-scale project on a potable water reservoir, which is not something that has been witnessed in other similar Asian initiatives so far. The limited staging space at the Tengeh Reservoir project represents another challenge for EPC contractors and developers.

A good understanding of the regulations and requirements is therefore crucial, as this specific project is under scrutiny from local authorities and the national water agency.

"Theoretically, this specific project could be more expensive, however we have seen EPCs elsewhere coming up with good installations and methodologies. Therefore, having the experienced and innovative EPC teams in place is essential to ensure a cost-effective installation."

The 50MW project in Singapore is only the beginning with other opportunities coming to the market in the next few years.

"We already see a few floating PV projects that have been tendered out on reservoirs and even a 5MW floating PV plant near shore is in the process of being built north of Woodlands Waterfront Park. I believe there is definitely a huge interest in Singapore," Ong concludes.



Methodology

This Infrastructure Index provides an effective tool for identifying the most promising markets for infrastructure investment by allowing a refined analysis based on the comparison of specific factors, such as political stability and ease of doing business among different jurisdictions. The methodology adopted in the 2017 edition of this report has been retained and updated to reflect global market developments and incorporates a broader set of jurisdictions (which went from 40 in 2017 to 50 in 2019). The commentary provided in this report offers a regional context for our findings whilst also considering major themes in the industry, track records and project pipelines.

The parameters of the Infrastructure Index are based on the six main indicators and further sub-indicators, as shown below:

— Economic status
— Sustainability and innovation
— Tax environment
— Political stability
— Ease of doing business
— Private participation

All of these are weighted as follows:

4% Annual trade (% of GDP)
19% Credit rating and outlook
5% Interest rates

28% **Economic status**

5% Environmental performance
2.5% Innovation
9% Quality and condition of infrastructure

16.5% **Sustainability and innovation**

3% Corporate tax rate
1% Resource drain
3% Complexity

7% **Tax environment**

10% Governance and stability
2% Rule of law
7.5% Regulatory stability

19.5% **Political stability**

5% Transparency/corruption
7% Ease of doing business

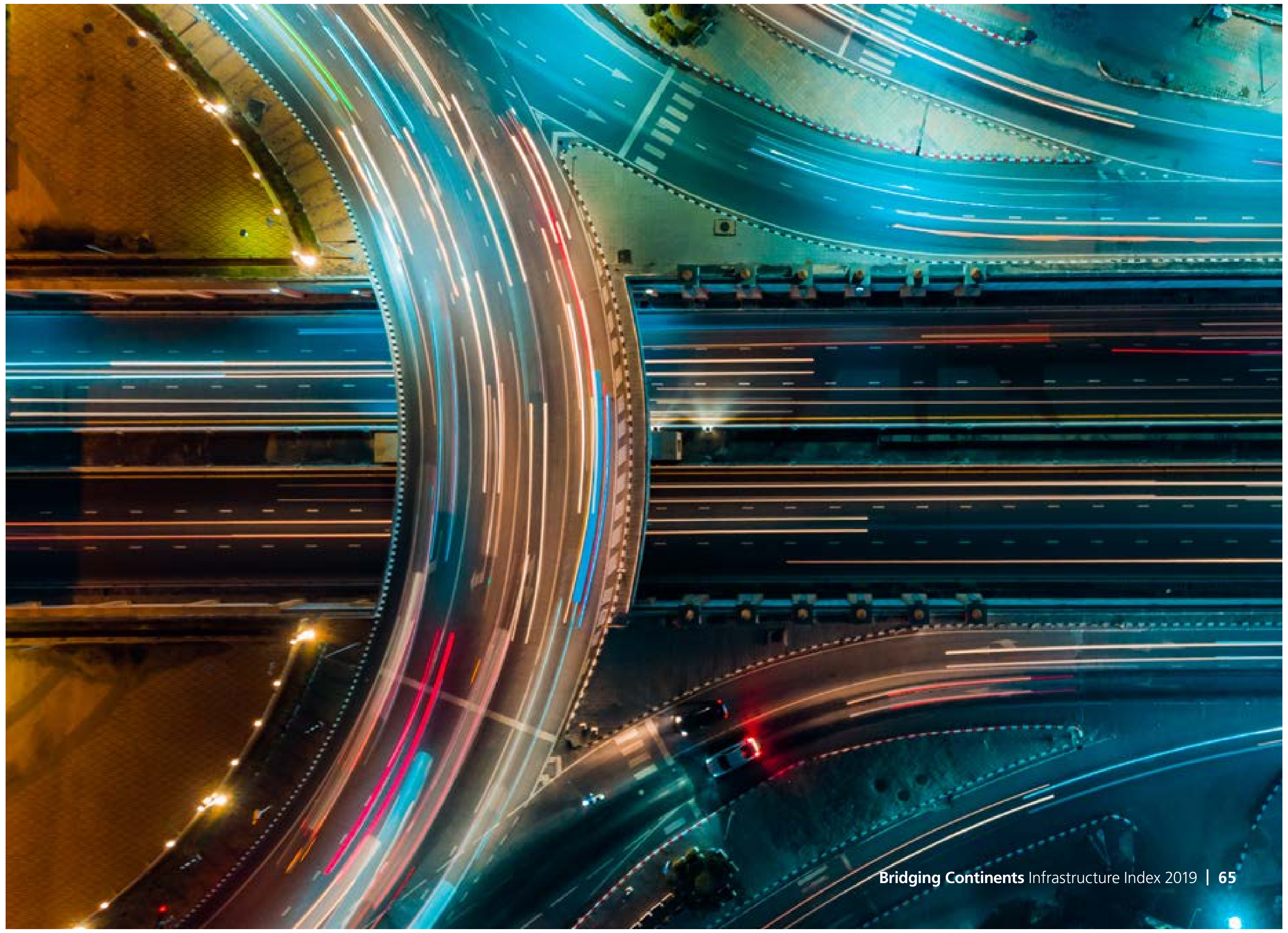
12% **Ease of doing business**

5% Government support
2% Gross fixed capital formation
10% Private investment

17% **Private participation**

The scores and subsequent rankings (rounded to the nearest 0.01) of the top ten countries are highlighted below.

	Ranking	Final score	Economic status	Sustainability and innovation	Tax environment	Political stability	Ease of doing business	Private participation
Germany	1	89.67	26.40	14.11	5.21	17.55	10.00	16.40
Netherlands	2	89.23	27.20	13.81	5.16	18.37	8.35	16.35
Singapore	3	87.90	27.00	12.89	4.96	18.90	10.60	13.55
Australia	4	87.50	25.10	13.20	5.24	16.77	11.25	15.95
Canada	5	86.66	25.10	12.56	4.60	17.35	11.10	15.95
Norway	6	86.08	25.50	12.71	5.49	19.18	9.15	14.05
United States	7	84.73	23.04	13.22	5.02	16.11	11.30	16.05
Finland	8	83.81	23.32	13.50	5.18	18.56	9.90	13.35
United Kingdom	9	83.15	21.32	13.63	4.93	17.97	10.35	14.95
Belgium	10	82.07	21.88	13.17	5.48	16.89	9.40	15.25



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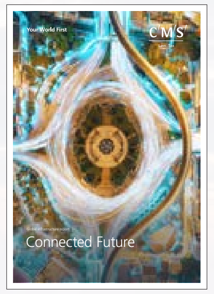
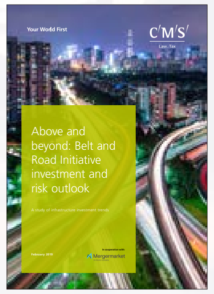
CMS is a top six global law firm with 70+ offices in 40+ countries. With over 4,800 lawyers globally, we have world-class bench strength. Our top tier infrastructure practice advises on some of the largest and most complex projects across the globe. Our sector expertise means we have the ability to work with clients at all stages of their project lifecycle.

Some of our other reports include:





About inspiratia

inspiratia is a pre-eminent and trusted source of global data, analytics, news and events for the renewable energy and infrastructure sectors since 2010. Its forward-looking and in-depth analyses of markets, tracking key trends and industry dynamics are sought after by leading practitioners globally including leading developers, banks, investors, infrastructure funds and advisers and increasingly new market entrants such as corporates and technology providers.

inspiratia produces a daily news and analysis service for both the infrastructure and renewable energy markets. inspiratia has a dedicated team of analysts who undertake bespoke research and analysis, including transaction support, for its global client base.

The commercial, financial and economic content produced by inspiratia is complemented by a global programme of briefings, roundtables, webinars and conferences, chaired by our industry experts.

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