

# CMS Infrastructure Index

Accelerating transformation

Summer 2021

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# The CMS Infrastructure Index 2021

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

The six criteria are:

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

To view the detailed scoring for each country, please visit the interactive 2021 Infrastructure Index [here](#).

**#1 Singapore**  
▲ 2019 (3)

**#2 Germany**  
▼ 2019 (1)

**#3 Netherlands**  
▼ 2019 (2)

**#4 US**  
▲ 2019 (7)

**#5 Australia**  
▼ 2019 (4)

**#6 UK**  
▲ 2019 (9)

**#7 Norway**  
▼ 2019 (6)

**#8 Canada**  
▼ 2019 (5)

**#9 Austria**  
▲ 2019 (11)

**#10 Finland**  
▼ 2019 (8)

**11 France**

**12 Hong Kong**

**13 Japan**

**14 South Korea**

**15 Czech Republic**

**16 United Arab Emirates**

**17 Belgium**

**18 Slovakia**

**19 Spain**

**20 China**

**21 Poland**

**22 Chile**

**23 Italy**

**24 Hungary**

**25 Qatar**

**26 Kuwait**

**27 Bulgaria**

**28 Romania**

**29 Malaysia**

**30 Saudi Arabia**

**31 India**

**32 Thailand**

**33 Indonesia**

**34 Peru**

**35 Oman**

**36 Mexico**

**37 Russia**

**38 Kazakhstan**

**39 Morocco**

**40 Vietnam**

**41 Colombia**

**42 Philippines**

**43 South Africa**

**44 Turkey**

**45 Brazil**

**46 Ukraine**

**47 Cambodia**

**48 Bangladesh**

**49 Algeria**

**50 Iran**

## Biggest risers

 Qatar (+17)

 Bulgaria (+14)

 Romania (+11)

## Biggest fallers

 Colombia (-15)

 Mexico (-9)

 Saudi Arabia (-9)

## Top scorers


 Economic status  
**Singapore (96.5)**

 Sustainability and innovation  
**Netherlands (95.6)**

 Tax environment  
**UAE (96.0)**

 Political stability  
**Singapore (94.9)**

 Ease of doing business  
**Singapore (99.3)**

 Private participation  
**China (90.7)**



# Foreword

The infrastructure market has remained resilient in the face of COVID-19, except for the obvious area of transport. Government stimulus packages around the world promise further activity, with the UK, US and EU, for example, outlining ambitious infrastructure spending programmes. As is often the question, will these eventuate?

COVID-19 has also provided the backdrop for tougher controls on foreign investment. The likes of the UK, France and Australia have either introduced laws for the first time or reduced the thresholds for voting rights or transaction values. However, that is not the case for all markets. Prior to the pandemic, protectionism appeared to be declining in the Middle East, CEE and APAC, where the need for foreign capital is greater. It is too early to tell what impact such regulations will have on capital flows in developed markets but on current transaction levels, it appears to be limited. Nevertheless, it is vital that infrastructure investors are fully aware of the broad scope of the controls when considering their investment plans.

There is significant attention on digital infrastructure and the pandemic demonstrated the need for investment in a balanced range of technologies. Cloud services and satellite connectivity will increase to deliver high speed internet anywhere in the world.

Infrastructure has always played an important role in ESG, and these considerations are now the rule, not the exception. Net Zero plays a big part in government policy; disclosures are now mandatory requirements and projects that will reduce carbon emissions are being supported. Investment strategies are also being shaped by stakeholders as they start to voice their concerns, including by way of shareholder activism and litigation.

The CMS 2021 Infrastructure Index has ranked 50 countries by their attractiveness for infrastructure investment and it paints a very positive picture: there are opportunities in all markets and across all asset classes. Singapore tops the leader board, bolstered by the unveiling of its Green Plan 2030 which aims to advance sustainable development and reduce the country's carbon footprint. There are big spending plans in every region as governments seek to close infrastructure gaps, recover from the pandemic and stimulate their economies.

Infrastructure markets remain buoyant and there is no sign of slowing down.

Thank you to GIIA, who collaborated with us throughout, our research partners Capital Economics and our interviewees for giving up their valuable time to share their views on the infrastructure sector in their respective markets.

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Reflections from GIIA:

# A rapidly changing landscape for infrastructure



**Lawrence Slade**  
CEO, GIIA

As investors around the world will testify, the landscape for infrastructure as an asset class has changed markedly over the last couple of years.



The turbulence of the US and UK elections, Brexit, the changing of the guard at the European Commission and Parliament, Net Zero commitments and of course the global pandemic have all impacted a sector whose characteristics are traditionally built around stability, predictability and low risk. Ironically, it is perhaps because of this unprecedented period of uncertainty that the asset class has proved its worth once again and continues to grow exponentially.

This significant period of change has brought with it a smorgasbord of challenge and opportunity. The focus on decarbonisation and climate resilience is accelerating investor strategies related to current and future portfolios, whilst the world of 'zoom' has changed the way we work, probably for good, opening up even more opportunity for the 'fourth utility' of telecoms and data. Whilst the unwelcome hit on international travel will take time to recover, the interregnum has perhaps provided the breathing space for aviation to make essential progress on its sustainability agenda.

Yet, as the world spins ever faster, many of the longstanding issues remain. Governments around the world are turning to infrastructure as a key part of their post-pandemic economic recovery plans, but in many cases the role of private capital in those plans is not clear. Billions of dry powder

**“Billions of dry powder remains ready to be deployed to work alongside the public sector if policy makers make the right decisions about funding models and pipelines.”**

remains ready to be deployed to work alongside the public sector if policy makers make the right decisions about funding models and pipelines. Regulators continue to grapple with striking the balance between responding to near-term consumer pressure and enabling essential long-term investment. Governments want an ever-increasing slice of the inward foreign investment pie whilst putting in place protectionist policies to enable them to intervene if they don't like the colour of the money. Treasury officials are under pressure to raise corporate tax revenue to pay down massive public borrowing whilst simultaneously competing as destinations for international capital.

As the membership body for the leading investors in infrastructure, GIIA is engaged with policy makers in the key markets on all these issues, and



more. With nearly USD 1trn of infrastructure assets under management, through 1,700 individual assets across 66 countries, GIIA members are analysing the investment environment around the world on a daily basis. In addition to representing the investor viewpoint in our global advocacy programme, we are working in partnership with many of the leading advisors to the sector to bring market insights and thought leadership to our members to help with their understanding of the issues and opportunities ahead.

We are delighted to have been able to work with CMS on this report and hope it brings new insights for our members.



**Jon Phillips**  
Director, Corporate  
Affairs, GIIA



Feature:

# Opportunities for investors

## **New normal: new opportunities**

The world is a changed place since the CMS Infrastructure Index in 2019. But COVID-19 has not dented demand for, private finance for investment around the world.

Even before the pandemic, low interest rates around the globe have left many investors looking away from their traditional, financial-focused assets, and towards alternative investments, including infrastructure. While economies locked down, infrastructure remained resilient. Now, government policies to revitalise markets have been heavily focused on infrastructure, which has high multiplier effects and deliver economic stimulus.

## **Data centres: airports of the digital world**

The public health emergency has, though, prompted some refocusing. In digital infrastructure, the roll out of 5G mobile broadband continues – but the likely legacy of higher rates of home and hybrid working

has underlined the value of other technologies too. It's renewed the demand for fibre-to-the-premises – cementing the opportunity for network asset companies in fixed telephony similar to the MastCo REITs in mobile. Strong demand for data centres is now global, with capacity needed in peripheral as well as central locations to deliver online services with low latency to rapidly growing 'frontier' markets.

## **Net Zero: continues to drive priorities**

Debate and action on climate change globally have continued, but approaches vary. Countries aiming to achieve Net Zero by 2050 or before can be called 'Emission Eliminators'. Many are already engaged in decarbonisation programmes which will rely on large-scale infrastructure projects in areas such as solar, wind, hydro and nuclear generation through electric vehicle charging point networks to carbon capture. Some, like Singapore, are also creating regional hubs in

green finance. Nations are both adapting infrastructure to be climate resilient, and responding to the impacts that climate change has already had on the world. Massive amounts of infrastructure spending will be needed to mitigate these impacts, including on flood defences, cooling systems and resilient agribusiness.

## **Transition: beyond petroleum**

'Energy Transitioners' are nations with a legacy of fossil fuel led growth such as China that are beginning to switch to greener energy sources. Their focus is largely on securing sustainable economic growth in a future without coal and oil, and in the Gulf States the push for economic diversification is resulting in some of the most ambitious infrastructure and development projects ever. While these players are embracing the energy transition, they are still cognisant of the balance between realising their green energy ambitions and ensuring revenues for growth and employment.



While economies locked down, infrastructure remained resilient.



Feature:

# Opportunities for investors

And, there are the potential ‘Technology Leapfroggers’. These are nations that looking to low-cost energy, with an emphasis on affordable off-grid solutions and renewables, such as developing nations in sub-Saharan Africa and South and Central Asia. As their economies and populations grow – and often with poorly developed electricity transmission networks – they are increasingly looking to low-cost decentralised options for energy.

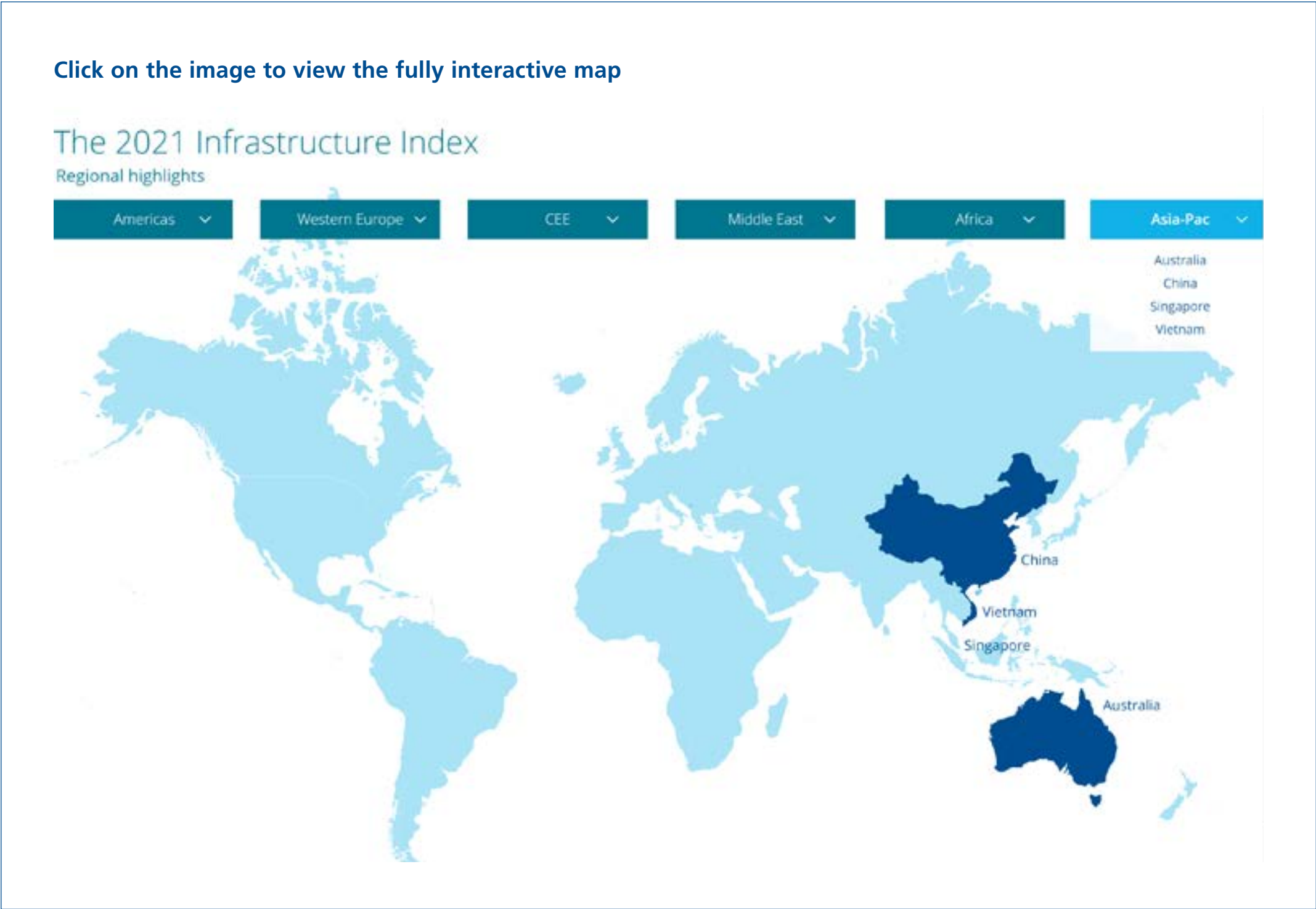
**FDI controls: here to stay**

Scrutiny of foreign investment has been ramping up. The list of sectors subject to controls has expanded to include most types of infrastructure, and the definition of a ‘foreign investor’ has expanded. Last year France lowered the threshold for intervention from 25% of voting rights to 10%. In Australia, there is now no lower limit on the size of foreign investment that may be required to notify the Foreign Investment Review Board. These trends are not stopping or even reducing cross-border investment in infrastructure, but they are adding to its complexity.

**PPP a successful export but UK has U-turned**

The PPP model, with its origins in the UK’s Private Finance Initiative (PFI) of the 1990s, is a well-established way of sourcing private funding and delivering public infrastructure. Cash-rich states like Saudi Arabia, which has its new Private Sector Participation Law, are now deploying the approach to facilitate development. In contrast, Britain scrapped PFI in 2018 and there has been no replacement so far.

But as government debts rise rapidly in the UK and elsewhere, there will be greater need for private finance to close the massive infrastructure gaps that exist around the world. Although PFI has been axed in Britain, the opportunities for infrastructure investors, and the PPP model, remain strong globally.





Feature: Net Zero

# The journey towards Net Zero

In early 2020, the top five risks threatening the global economy according to the World Economic Forum's 2020 Global Risks Report were all environmental for the first time. In 2021, infectious diseases replaced extreme weather in the top five.

COVID-19 has shown that broad lifestyle and policy changes are possible. By May 2020, central banks and governments across the G10 economies and China had committed an estimated USD 15trn of stimulus to help shield their economies from the pandemic. Just how much of this will be put towards stimulating a so-called 'green recovery' is yet to be seen.

The 2015 Paris Agreement is to hold the increase in the global average temperature to "well below 2°C above pre-industrial levels" while "pursuing efforts" to limit the rise to 1.5°C. While uptake of green solutions has progressed slower than environmentalists had hoped, the private and public sectors are taking steps to reduce carbon emissions. The EU, for example, plans to become climate neutral by 2050.

## Pathways to decarbonisation

The technological routes to decarbonisation are varied.

The cost of electricity from renewable sources is increasingly competitive. The costs of wind and solar PV have already reached cost parity with fossil-fuel generated power in many countries. By 2030, zero-carbon solutions could be competitive in sectors previously responsible for 70% of global emissions.

The traditional industrialised economy model of large-scale electricity generation and high-

voltage transmission networks retains many of its merits in a world of mega solar and wind farms, offshore arrays, hydro-power and nuclear. But green energy platforms also make decentralised local and low-scale generation viable. They also help to facilitate local projects in parts of the world where current networks are lacking or limited, as well as providing additional flexibility to the overall power system.

Intermittency of renewables presents a major challenge. Investment in energy storage infrastructure will be essential. Combined stationary and transport energy storage is forecast to grow to 2.5–4 terawatt hours per annum by 2030, from a current base of just 800 gigawatt hours. To date debt financings in the battery sector have been few and far between with short tenors, low leverage, more asset finance or cross-collateralisation structures and expensive pricing. Unlocking optimised debt finance is crucial to the future development of the battery storage sector.



## CASE STUDY:

### Pioneering battery storage, Merseyside, UK

CMS client Zenobe has been awarded a long-term reactive power contract by National Grid. Commencing in April 2022, it will deliver reactive power and related inertia services.

This is the first of its kind for the battery storage industry. It will provide an increasingly important revenue stream as the wider electricity system increases its penetration of non-synchronous, intermittent generation. Zenobe is also one of the few industry players to have successfully procured debt financing for its projects.



Feature: Net Zero

# The journey towards Net Zero



CASE STUDY:  
**Industrial carbon capture**

CMS advises on two of the five UK carbon capture, usage and storage (CCUS) projects currently in development.

The UK’s most advanced CCUS project, Net Zero Teesside (NZT), is made up of a consortium of some of the world’s largest oil companies and is led by BP. The multi-billion-GBP project aims to decarbonise a cluster of carbon-intensive businesses by as early as 2030 and deliver the UK’s first zero-carbon industrial cluster.

Pale Blue Dot’s Acorn project in Scotland aims to be operational by 2024. It will reuse existing oil and gas infrastructure to produce hydrogen for the surrounding industry.

Clean power generation is only one component of the energy transition. In the transport sector, electric vehicles are already popular in much of the world, with their popularity driven by changing social attitudes and – in some countries – regulations and incentives. Carbon capture and storage infrastructure will be essential to the success of clean energy transition. These technologies allow greenhouse gas emissions to be removed from the environment in cases where its production cannot easily be avoided, such as in aviation, shipping, construction and agriculture.

Climate change is a global issue with significant scope for investment across borders. However, we are still a long way from a global solution. Countries have different risk attitudes, different natural endowments and different types of expertise. Yet they all face the challenging task of how to meet growing demand for energy in a more competitive environment while reducing emissions.

**Movement towards climate action**

Most countries fall into one of three broad categories of climate change action.

Emission Eliminators	Energy Transitioners	Technology Leapfroggers
<p><b>Aim to achieve Net Zero carbon emissions by 2050 or before.</b></p> <p>Examples include the United Kingdom, France and Hungary where Net Zero targets are legally binding. More than two-thirds of the world’s GDP by purchasing power parity is currently generated in countries where authorities have set or proposed a Net Zero target. However, many countries have continued to invest further into carbon-intensive activities despite an overarching commitment to decarbonise their economies.</p>	<p><b>Nations with a legacy of fossil fuel-led growth that are switching to greener energy sources.</b></p> <p>In Saudi Arabia, its Saudi Vision 2030 strategic framework will see the share of electricity it derives from renewable sources increase to 50% by the end of the decade, up from less than 0.05% in 2018. China, the world’s biggest CO2 emitter has set a carbon zero target by 2060.</p> <p>The scope for infrastructure investment in these countries, as they look to reduce their reliance on coal and oil, is vast, with significant emphasis placed on the cost-effectiveness of alternatives.</p>	<p><b>Looking to low-cost energy, with an emphasis on affordable off-grid solutions and renewables.</b></p> <p>Examples include many developing nations in sub-Saharan Africa and South and Central Asia. Their population growth has not always been accompanied by economic growth or an improvement of the historic, often poorly developed electricity transmission networks. This means they are increasingly looking to low-cost options with minimal capital requirements.</p> <p>With three-quarters of a billion people globally without access to energy today, achieving universal energy access by 2030 will require USD 35bn in annual spend between 2021 and 2030. In many cases, these countries will ‘leapfrog’ fossil fuel technologies and build energy systems based on renewables.</p>



# Interview: Market perspective

## Niall Mills, Global Head of Infrastructure Investment, First Sentier Investors



First Sentier Investors (FSI) provides investment management services to institutional and wholesale investors across a diverse range of specialist asset classes, with funds under management of EUR 153.4bn.

“We’ve been doing ESG as an absolute core strategy for far longer than it’s been fashionable,” says Niall Mills, Global Head of Infrastructure Investment at First Sentier Investors. As one of the pioneers of infrastructure investing, FSI has over 25 years’ experience across sectors and economic cycles. The Direct Infrastructure team manages EUR 11.3bn of capital.

At FSI, sustainability and infrastructure investment go hand in hand. “We see ESG as essential to sustaining the value of an enterprise,” explains Mills. “If you’re investing in a utility or an essential

service, it should still be there in 20 years. You have a social contract and responsibility.”

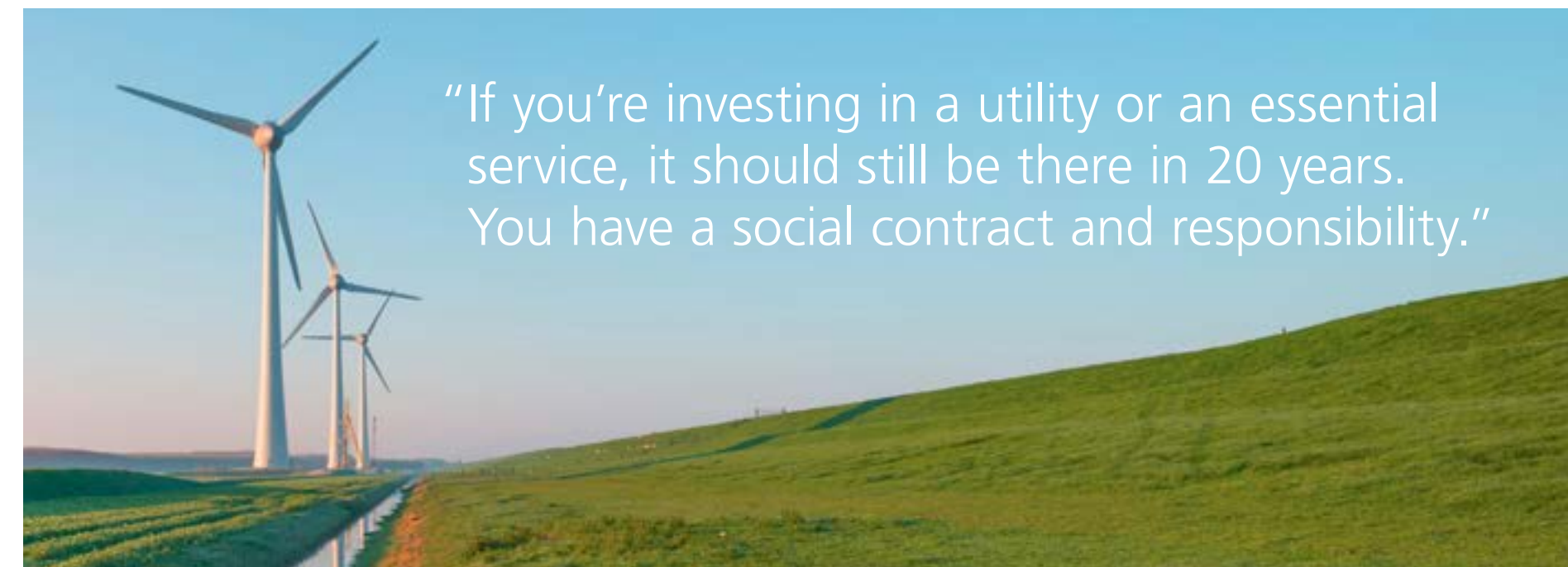
This is evidenced by the climate action goals of FSI’s portfolio companies. For example, ferry operator Scandlines has invested over EUR 300m in green technologies since 2011 as part of its vision to achieve zero-emissions operations. Similarly, Nordion Energi aims to become the first 100% green gas transmission grid in Europe, while Evos has set a target of 50% reduction in Scope 1 and 2 emissions by 2030.

By targeting more stable assets, FSI can add sustainable value over the long term by imbedding improvements into the business. “The most important thing,” according to Mills, “is recognising the need to constantly improve the businesses in the portfolio and delivering for customers and stakeholders to ensure that, in ten or 20 years’ time, every enterprise or service is still valuable.” This includes innovating to deliver “everything their customers want and more”.

But how does Mills influence companies he is investing in to sign up to ESG and best practice?

“We do that from the bottom up, not top down. If you don’t effect change on the front line, if you don’t align and motivate your frontline staff and operatives to act, nothing will change. Policies don’t create change.” He believes in encouraging people to want to do things better for their customers and for the environment. “When you build that momentum up it is unstoppable. It’s absolutely fantastic when you see that working.”

Nonetheless he has a reflective take on ESG and Net Zero being the buzz words of the moment. “It’s great to see this all spreading into real practice and not just protest. But we aren’t influenced by fashion; we are focused on delivering our promise to investors. We never lose sight of the fact we’re investing to protect people’s quite often modest pensions. The responsibility is real.”



“If you’re investing in a utility or an essential service, it should still be there in 20 years. You have a social contract and responsibility.”



Feature: Digital

# Pandemic emphasises demand for digital

## Hybrid working requires investment

Although the roll out of 5G continues around the globe, with 162 commercial networks having launched worldwide at the time of writing, provision is variable across different geographies. The pandemic has highlighted the importance of reliable connectivity and fast internet access, particularly in rural areas.

Fast broadband is now an essential utility alongside power and water in many nations, placing the telecommunications industry in the spotlight. While the digital transformation was well underway prior to the pandemic, from smart infrastructure and the Internet of Things to digital entertainment and digital finance, the centrality of the internet in our daily lives was put into sharp focus by the pandemic. As the 'new normal'

emerges, and flexible working models become more prevalent, significant digital infrastructure investment to provide reliable, superfast connectivity is essential. Pre-pandemic, 5G roll out was the focus of many Western nations, and remains a priority, but coverage is fragmented. It is still unclear how networks will be consolidated where a mix of equipment has been used.

COVID-19 has demonstrated the need for investment in a balanced range of digital technologies. The use of cloud services continues to grow and, during 2020 and 2021, they have been used as much for collaboration as for storing content. From data centres to subsea cables, satellite internet and smart cities, the global acceleration of digital trends offers up many infrastructure investment opportunities.

From data centres to subsea cables, satellite internet and smart cities, the global acceleration of digital trends offers many infrastructure investment opportunities.

## Geography driving choice of technology

In densely populated areas of developed and emerging economies, existing and new operators are rolling out fibre when the economics stack up. New fibre companies are providing neutral host structures that are offered on a wholesale basis to operators. In February 2021, KKR announced it had entered into an agreement with Telefónica to establish Chile's first open access wholesale fibre optics company and, in Poland, Orange Polska and APG Group have formed a joint venture to roll out a fibre network to 1.7m households.

In more rural locations, where the unit costs of fibre are less favourable and the challenge of connecting 'the last mile' is more acute, providers are implementing solutions such as fixed wireless, mobile broadband and satellite.

## Space: the new frontier

Starlink is the satellite network that SpaceX is developing to provide low-cost internet to remote locations and in April 2021, the US Federal Communications Commission approved SpaceX's





Feature: Digital

# Pandemic emphasises demand for digital

proposal to modify its Starlink satellite licence. Reported to cost more than USD 10bn, the network of thousands of satellites is designed to deliver high-speed internet anywhere on the planet.

Similar plans for space-based internet are being launched by OneWeb, whose major stakeholders include Eutelsat, the UK government and India's Bharti Global. OneWeb's fleet of 648 Low Earth Orbit satellites are expected to deliver high-speed, low-latency connectivity to Alaska, Northern Europe, Greenland, Iceland, the Arctic Seas and Canada later this year, and globally by the end of 2022.

## Data centres to support collaboration while reducing environmental footprint

As workers collaborate remotely and online trading increases, latency becomes more problematic; more localised data centres help reduce the delays. It is not enough to have superfast internet on the edges of the network, the supporting digital infrastructure must be out on the edge too.

Data centres, while central to digital transformation, are highly energy intensive. Given global commitments on greenhouse gas emissions, the industry is making strides to diversify data centre power generation sources, with renewables incorporated into the mix.

Infrastructure is being built and upgraded to improve the energy efficiency of data centres, particularly in managing the cooling process.

## Big Tech is leading the charge

Many digital infrastructure projects are being driven by the large, mostly US, tech firms.

- Microsoft, which operates more than 200 data centres, is planning to build between 50 and 100 more each year 'for the foreseeable future' as its Azure cloud footprint grows. This includes establishing a presence in ten new countries by the end of 2021.
- Apple has plans to spend an extra USD 80bn in the US over the next five years, opening new facilities and devoting resources to future technologies including 5G.
- Facebook recently announced that it is investing in two subsea cables connecting Singapore and Indonesia to North America.
- Google has invested in at least 15 subsea fibre cable projects.
- Amazon is a part-owner of two cables and a major buyer of capacity in three others.
- Chinese company Hengtong Optic-Electric Co. is building its 'Peace Cable' for PCCW Global and Orange and it will reach Marseilles from China via Pakistan and East Africa in late-2021.

## Specialist funds provide finance

There is a rise in specialist funds that only invest in digital infrastructure; Cube Infrastructure Managers in Luxembourg has a vehicle investing purely to support fibre rollout in areas of Europe where high-capacity networks are not yet deployed. Institutional investors with long-term views now see telecoms as a core strategy.

With digital now seen as critical infrastructure, increased Foreign Direct Investment (FDI) controls are impacting on the deals in the digital infrastructure space. As nations focus on security of supply and critical infrastructure, they are increasingly scrutinising who is behind each investment.

The pandemic has amplified the need for spending on digital infrastructure, providing investment opportunities across the globe. Where previously we saw companies vying for prime office real-estate, the future will more likely see them competing for the best data centre locations. Soaring demand for cloud and internet-based services in Africa, for example, has seen large tech companies, including the likes of Google, Amazon and Microsoft, continue to open data centres across the continent.





Feature: New funding models

# Pandemics, politics and partnerships

## Use of PPP burgeoning worldwide

From social infrastructure in Peru through to sustainable energy in Africa, the use of public private partnerships (PPPs) to fund and deliver capital projects is spreading around the world. Their ubiquity is reflected in the International Federation of Consulting Engineers' (FIDIC) plan to release a standard form contract for PPP projects in 2023.

However, in the United Kingdom (where the private finance initiative (PFI) PPP model was first adopted in the early 1990s), the government stated in 2018 that it would no longer use PF2, its second-generation version of PFI, for new projects.

Given the immense capital and technological requirements of climate-smart infrastructure, PPPs

can offer a helpful framework within which public and private sectors can pool and coordinate their resources. Governments have unique powers to influence the sustainability of infrastructure when crafting PPP contracts. More recently, PPPs have been modified to account for social and environmental impacts as opposed to a specific class of PPPs.

In low-income countries, where access to infrastructure remains a key concern, a minimum performance criterion can be included to incentivise investments in poorer communities. PPPs can also help to encourage private sector investments in otherwise underfunded regions when led by national and international development banks.

Increased public expenditure combined with economic contraction has forced debt-to-GDP ratios to historic highs in many countries around the world.

## Balancing national budgets

The UK's National Infrastructure Strategy and its focus on infrastructure development has reinforced its shift away from PPP-based infrastructure funding. Instead, with low gilts borrowing rates and the need for urgent and substantial pandemic economic stimulus, the UK government appears willing to borrow-and-build, with plans to invest GBP 100bn in infrastructure in 2021–22. But is this approach a fiscally sustainable position into the long-term – for the UK or anywhere else?

Increased public expenditure combined with economic contraction has forced debt-to-GDP ratios to historic highs in many countries around the world. OECD governments alone borrowed a record-breaking USD 18trn in 2020, up USD 6.8trn on the previous year and are expected to borrow a further USD 19trn this year. Government debt in Sub-Saharan Africa rose an average of 8 percentage points to 70% of GDP last year, and is expected to rise further in 2021, leading to major concerns about debt sustainability in the region.





Feature: New funding models

# Pandemics, politics and partnerships



Infrastructure stimulus packages are particularly beneficial during recessions. According to BCG, these programmes offer opportunities for highly geared impact on macroeconomic activity, with a multiplier effect of between 0.4 and 2.2 times annual GDP.

With government balance sheets strained, there is an increasingly important role for the private sector to help fund major infrastructure projects.

Infrastructure stimulus packages are particularly beneficial during recessions. According to BCG, these programmes offer opportunities for highly geared impact on macroeconomic activity, with a multiplier effect of between 0.4 and 2.2 times annual GDP. Every USD 1bn invested has the potential to support 10,000 total jobs within the economy.

## Seeking new funding models

Governments are seeking a range of new funding models to enable them to achieve their infrastructure ambitions and help stimulate their economies post-pandemic.

First of all, there are varieties of the PPP model that remain in favour – many of which are built on the principles of PFI (for example PPPs across Europe, the Middle East, and Wales).

However, where a government looks for a structure that is closer to economic infrastructure (where the project is paid for either directly or indirectly by customers), there are different approaches that could assist in developing new funding models.

— **Regulated Asset Base (RAB) models:** First, measures can be taken to gain more revenues from charging (future) users. Where there are existing paying customers of a regulated infrastructure provider, RAB models can improve project finances by making users pay more sooner. Previously used in Germany and Australia, this can work well for long-duration mega projects. Utility companies are permitted to start charging end-users as the investment costs are incurred rather than waiting for the project to be completed.

— **Windfall gains:** Second, there may be the option to capture ‘windfall gains’ that accrue to non-users of infrastructure. This would involve gathering revenues from the additional value created by these infrastructure projects themselves. For example, new infrastructure – such as improved transport networks - can raise land values, thus accruing additional tax revenue. This extra revenue can be used to fund the transport network itself.

In the United States, tax increment financing (TIF), which allows authorities to finance current projects via bonds that are repaid using the future gains in tax revenue resulting from the project, has long been popular and is becoming more common. The UK’s first TIF helped fund Edinburgh City Council’s GBP 84m waterfront redevelopment project in 2011.



Interview:

# Market perspective

## Ahmed Mubashir, Director, Infrastructure and Renewable Resources, Alberta Investment Management Corporation (AIMCo)



With CAD 119bn worth of assets under management, AIMCo is one of Canada's largest institutional investment managers, and is responsible for the investment of pension, endowment and government funds in Alberta.

AIMCo's Infrastructure and Renewable Resources team manage a global portfolio of more than CAD 11bn. Investments include Chilean electricity transmission and distribution company Grupo SAESA, London City Airport, and Eolia, one of the largest independent renewable power producers in Spain with close to 900 MW of installed capacity. Ahmed Mubashir, a director in the team and responsible for leading infrastructure investing in Europe, believes the key to countries securing private investment post-COVID is a funding model that better shares risk between government and investors.

"If governments want private investment to aid economic recovery post-pandemic, they will need to think outside the box and come up with innovative ways of attracting private capital to help alleviate some of the burden that is on them", comments Mubashir.

As many nations have had to borrow to unprecedented levels to prop up their economies during the pandemic, access to private investment will be even more critical for cash-strapped public institutions delivering infrastructure over coming years; this requires finding and deploying funding and regulatory models that work for all stakeholders. He continues: "Now is the time for governments to reflect on what risks are appropriate and where."

"The one thing infrastructure investors are after is stability", but the COVID-19 crisis has highlighted how difficult this can be to achieve.

This isn't a call for the public sector to shoulder the burden of the normal ups and downs of business. Mubashir believes that experienced and expert long-term investors, like AIMCo, are well placed to take on the risks of building, operating,

financing and refinancing infrastructure. These include preparing for and managing the potential impact of events such as pandemics or extreme weather. "Operational risk is for infrastructure investors", he says.

And it isn't about the taxpayers bailing-out investors when things go wrong, or errors have been made. "Holding investors to account for failures is very fair – with penalties associated."

But some policymakers' responses to address the impacts of COVID-19 have highlighted how easily the stability of regulatory arrangements can be compromised in uncertain times. The AIMCo director cites an example where a utility regulator denied a utility the right to raise rates in accordance with accepted rate making norms last year. "The regulator, citing the impact of the pandemic, ended up saying the company could not raise rates", he recalls.

But there are consequences to such a decision. Judgements made in the interests of the public must be balanced with the interests of the investment community, such that all parties

benefit. Says Mubashir, "long-term investors are built to weather short-term challenges, even when they relate to regulatory matters. We appreciate the toll the pandemic had on society during its peak, but as investors we are also mindful of the capital that has been invested over previous years and the pressure on the economics of the investment when those costs cannot be recovered as forecast. An investor's ability to continue to deploy long-term capital requires a stable regulatory environment, thereby ensuring a long-term positive societal impact."

**"The one thing infrastructure investors are after is stability"**



Feature: Protectionism

# Protectionism is the New Normal

Foreign Direct Investment (FDI) controls are nothing new, but political concerns about hostile nations, the impact of globalisation, and most recently the focus on critical supply chains brought about by COVID-19 have resulted in the strengthening of regulations and much greater scrutiny of deals.

Navigating these controls, as well as other regulatory and merger control approvals, is becoming increasingly complex for many transactions. Infrastructure investors need to be alive to the broad scope of the controls when considering their strategic investment plans.

## FDI under the microscope

Scrutiny of foreign investment has been steadily increasing in recent years, with the push coming from largely western nations. Just some examples are:

- **Australia:** the monetary notification thresholds in foreign investment rules were reduced to AUD 0, meaning most proposed foreign investments would be required to notify the Foreign Investment Review Board and seek Treasurer approval.
- **France:** in 2020, France brought in temporary measures which included lowering the threshold for intervention in investments by non-EU/EEA investors in a French entity from 25% of voting rights to 10%.

- **Germany:** there have been at least 10 amendments to German investment control rules in the last three years, with modifications in 2020 bringing significant changes introducing standstill obligations, expanding the sectors subject to review and the introducing a new assessment standard making intervention more likely.
- **United Kingdom:** the UK has recently enacted the National Security and Investment Act which introduces an expansive regime requiring mandatory notification of a range of transactions including the acquisition of minority non-controlling interests and assets including land and IP rights in 17 broadly defined sectors.
- **United States:** since 2018, the Committee on Foreign Investment in the United States (CFIUS) has undergone significant regulatory changes, including the expansion of its jurisdiction to review minority, non-controlling investments in US businesses developing or

producing critical technologies, owning or operating critical infrastructure assets and possessing or collecting sensitive personal data of citizens.

## A widening scope

Noticeably in all jurisdictions, the list of sectors subject to controls is expanding to include a broad range of 'critical' sectors including energy, water, telecoms, health and transport infrastructure.

The objectives of national controls are largely aligned, principally being focused on the protection of national interests and security. However, there are regulatory challenges around the lack of consistency of approach, creating a global patchwork of controls and approvals. This places a heavy due diligence burden on infrastructure investors and can result in scrutiny of transactions of even non-controlling minority interests with limited nexus to the relevant jurisdiction.



Feature: Protectionism

# Protectionism is the New Normal

New measures often widen the definition of who is regarded as a 'foreign investor'. Regimes have redefined the test to capture domestic vehicles beneficially owned, or ultimately controlled, by a third country investor. This can make the assessment of foreign investor controls in transactions which have complex holding structures difficult.

## COVID-19 intensified protectionist behaviours

COVID-19 has given greater importance to national security in broad terms, as well as 'essential' supply chains. The closing of borders has led many nations to feel a level of self-reliance is required to deal with such emergencies. Responding to concerns, governments have sought to protect health and other critical supply chains. They are also keen to bolster industry and jobs for local populations as economies begin to work towards recovery.

One of the most high-profile examples began in March 2020, when the European Commission called on member states to set up screening mechanisms to protect against risks to critical supplies and infrastructure. Accusations of vaccine nationalism and stockpiling have been a regular feature in the headlines, with the US

using the Defence Production Act to compel private companies to fulfil its contracts ahead of any other orders for the likes of N95 masks, syringes and vials.

## Regulations a response to 'hostile nations'

Meanwhile, there remains significant concern over rogue states. In recent years, regimes have expanded FDI controls as a response to concerns about perceived levels of foreign investment and hostile actors gaining control of key infrastructure. In 2020, Australia announced it was vetoing the state of Victoria's participation in China's Belt and Road Initiative (BRI). Around the same time, the Indian government changed the rules to allow FDI from neighbouring countries only with its prior approval, even in sectors where previously automatic clearances were allowed.

## APAC and CEE open for business

Pushback on foreign investment is, however, not universal. The UAE previously required 51% ownership by local shareholders, but now permits 100% foreign ownership on the ground in Dubai in some industries.

Prior to the pandemic, protectionism appeared to be declining in the APAC region with countries

The CEE region has seen significant investment from China, with almost all countries in the region part of its Belt and Road Initiative.

welcoming new initiatives funded by China, Japan and Korea. MRT Jakarta recently awarded a USD 317m contract to a joint venture between Japan's Sumitomo Mitsui Construction and Hutama Karya in Indonesia to construct part of phase 2A of Jakarta's first metro line.

The CEE region has likewise seen significant investment from China, with almost all countries in the region part of its Belt and Road Initiative. In particular, non-EU nations like Serbia, Ukraine and Montenegro have attracted interest from Chinese investors. The 200MW Nikopol solar plant in Ukraine, which came online in 2019, and Montenegro's under-construction Bar-Boljare motorway, have both been financed by Chinese money.

## Regulation unlikely to cool investment

It is too early yet to tell what impact FDI controls are having on infrastructure investment, although it is not necessarily expected to have

a meaningful impact on deals. However, there will be several impacts:

- **Distribution:** foreign investment may move across to non-infrastructure or non-strategic projects as scrutiny of ownership causes a level of discomfort for some foreign investors and adds uncertainty to project execution.
- **Cost and complexity:** these will increase as conditions and undertakings are placed on projects.
- **Longer timescales:** with clearance processes often being subject to political intervention with protracted review periods, timescales will also be impacted.

Continued fears about infrastructure security alongside anti-globalisation sentiment means this period of greater regulation looks set to continue long after the COVID-19 crisis has passed.



Feature: BRI

# Belt and Road Initiative

What does the future hold for the Belt and Road initiative at a time of heightened geopolitical tensions, as governments around the world try to deal with both the coronavirus and climate change?

China's Belt and Road Initiative (BRI) has grown from a scheme evoking the ancient Afro-Eurasian silk roads, aimed at boosting regional trade corridors and cooperation, into a template for global connectivity. As well as creating infrastructure to bolster trade and commerce, it seeks to support Chinese priorities such as policy coordination, connectivity, financial integration and cultural connections. It is arguably the most ambitious development strategy ever.

At its simplest, BRI is an umbrella term for extraterritorial Chinese participation in the creation of 'traditional' infrastructure, such as roads, ports and power stations. In a stereotypical BRI deal, a Chinese entity finances an infrastructure project which is typically then undertaken by Chinese contractors. This model has already delivered infrastructure worth hundreds of billions of dollars, often in countries which have previously found it challenging to finance such projects. However, amid concern in some capitals about the expansion of Chinese influence, BRI has also evolved to encompass a far wider range of infrastructure developments.

## **Broadening the Belt and Road**

Aspects of BRI such as the Health Silk Road and the Digital Silk Road have attracted increasing attention, boosted respectively by China's provision of medical equipment and vaccines to many BRI countries, and by its successes in implementing tech systems ranging from telecoms and cloud computing to mobile banking and surveillance systems.

Other concepts still unfamiliar in the West, like the Polar Silk Road (creating new routes across the Arctic as the ice retreats) and the Silk Road in the Air (developing airfreight infrastructure) are well established in China and figure in its latest Five-Year Plan. The Space Silk Road is an ambitious attempt to become a global space power, centred on the BeiDou satellite navigation system.

BRI has also become something of a brand for China's global economic participation, suggesting a degree of coordination that does not always exist. There is no BRI leadership unit or secretariat, and while BRI is certainly subject to considerable central influence, the extent and strength of central control is debateable. Some commentators have detected competition between different Chinese entities involved in BRI, and not all BRI projects have been of the quality that the Chinese government wants to promote.

...aspects of BRI such as the Health Silk Road and the Digital Silk Road have attracted increasing amounts of attention...





Feature: BRI

# Belt and Road Initiative

## Promoting sustainability

Not every BRI project has been a success. Particularly in the early days of the initiative, some Chinese entities made unsustainable deals, with insufficient due diligence. Some governments, too, saw BRI as an easy way to realise political vanity projects, or to build high-profile but unviable schemes that more cautious funders had refused to support.

But while a few troubled projects made the headlines, many hundreds of others went ahead successfully. A recent CMS survey of BRI participants worldwide showed that, while the politics of BRI can add an extra layer of complexity to some projects, the problems that arise in BRI schemes are often just those familiar from other infrastructure work.

This may be even more so in future, as BRI projects increasingly come to resemble non-BRI schemes. In 2018 China announced a package of ambitions – labelled BRI 2.0 – to make the Belt and Road a more sustainable venture, with a far greater emphasis on principles such as ‘open, green and clean cooperation’, as well as multilateralism, partnerships and transparency.

BRI 2.0 also highlights the need to ensure commercial and fiscal sustainability. While BRI was

## At the recent G7 summit, the latest proposed alternative to BRI was given a name: Build Back Better World

never really the limitless debt-dispensing machine of popular caricature, it is clear that Chinese lenders have become more selective in backing projects, while BRI financing has been opened up to an increasingly varied list of institutions and businesses, including non-Chinese sources of capital.

Many recent statements from China’s leaders, including President Xi, have confirmed that China now sees the ideas of ‘high quality development’ and ‘high-quality cooperation’ as integral to the future of BRI. And the average BRI project is getting smaller, quicker and cleaner – it’s increasingly likely to be a solar farm or a smart city reconfiguration, rather than a flagship piece of infrastructure that takes a decade or more to develop.

## Belt and Road tensions

BRI is a truly global scheme. About 140 nations and over 30 international organisations have signed various BRI cooperation documents. One

indication of its success is the series of attempts by some Western governments to create rival schemes, with the aim of challenging what many see as the strategic geopolitical advantage BRI has gifted China.

At the recent G7 summit, the latest proposed alternative to BRI was given a name: Build Back Better World (B3W). Briefings from the White House – which has taken the lead in promoting the idea – and the G7’s closing communiqué provided a few details, although they were more about aspirations than practicalities. Notably, they offered no insight on the likely size of B3W, or specifics about its financing. In reality, the initiative is still very much on the drawing board, with the G7 pledging to establish a taskforce that will develop proposals and report in the autumn.

Many of the G7’s ideas for B3W – such as creating resilient infrastructure, health systems and security, developing digital solutions, promoting “clean and green growth”, strengthening partnerships with developing nations, implementing sustainable projects, mobilising more private sector capital and so on – are already familiar from BRI 2.0. This may be inevitable: they are themes we can expect to see

at the heart of infrastructure development over the next decade, whoever is backing it. But they also highlight the aim of some Western nations – particularly the US – to compete with and push back against BRI.

The biggest current flashpoint between China and the US in relation to BRI is standards and technology. China’s plan to become a tech superpower by 2050 looks set to see it develop systems and standards that compete with Western offerings, and potentially dominate some geographical markets. Many in the US see this as a question not only of competition and influence but also of security. At the time of writing a slew of bills in the Senate and the House seek, in a variety of ways, to counter China’s progress in this area. Most have strong bipartisan support.

Even before this, the Trump administration pushed back against aspects of the Digital Silk Road, notably in its attempts to discourage various nations from striking 5G deals with Chinese providers such as Huawei, and in its Clean Network Program, intended to restrict or eliminate Chinese involvement in, for example, telecoms networks that connect to US networks, and cloud systems and apps that handle US data.



Feature: BRI

# Belt and Road Initiative



## BRI and the future

Some BRI projects have been knocked off course by COVID-19, and some investment has been reined in, but the initiative as a whole has continued throughout the pandemic. According to the Xinhua news agency, Chinese entities signed contracts worth over USD 31bn in countries along the Belt and Road in the first quarter of 2021. BRI figures in both this year's Chinese government work report and its new 14th Five-Year Plan – again with an emphasis on “high-quality” development and cooperation.

The most immediate concern for BRI is the US ambition to limit its growth. However, while the US hopes to discourage Chinese investments in certain areas – particularly certain technologies – it may not be in America's broader interests to block other Chinese FDI and lending. The world's infrastructure gap is almost unimaginably large: in trailing its B3W initiative, the Biden administration spoke of a USD 40trn infrastructure need in the developing world, while suggesting that B3W would “catalyse hundreds of billions of dollars of infrastructure investment”. Hundreds of billions will clearly be welcome (although it is not yet clear how much of B3W will be ‘new money’) but will

still leave a need for many trillions more. It is not easy to see how that gap could be bridged without extensive Chinese funding.

The International Energy Agency, for example, believes that annual clean energy investment in emerging and developing economies will have to increase from around USD 150bn now to more than USD 1trn by 2030 if global targets for zero emissions by 2050 are to be reached. Much of that existing funding comes from China, and Chinese participation looks to be essential in achieving the sort of funding increase suggested by the IEA's analysis, as well as project-level expertise, and the general intentional engagement necessary to tackle climate change.

As long as BRI options are available on relatively attractive terms – and particularly where there is a shortage of viable alternatives – demand from governments seeking to develop badly-needed infrastructure and to boost their economies after the pandemic will ensure that there continues to be a substantial pipeline of BRI projects.



Spotlight: Singapore

# Singapore ranks top in Index

Overall score	82.9
Economic status Rank 1	96.5
Sustainability and innovation Rank 12	85.9
Tax environment Rank 4	82.4
Political stability Rank 1	94.9
Ease of doing business Rank 1	99.3
Private participation Rank 40	32.4

Already established as a regional infrastructure hub, Singapore aims to take the lead in promoting sustainable development and finance internationally.

Singapore has jumped up two places to claim the number one spot in the 2021 Infrastructure Index. The city state is ranked first across indicators of economic status, political stability and ease of doing business, and scores highly as an investor-friendly tax environment.

Singapore’s growth as a hub for Asian infrastructure finance and development has given it a strong ecosystem of banks, insurers, lawyers and other specialists, ready to meet the needs of international investors. And the government has now identified infrastructure as a key pillar of national economic growth, recently announcing

plans to issue up to SGD 90bn (USD 68bn) of new bonds to finance major infrastructure projects – notably the development of the island’s rail network, which is set to grow from its current 230km to about 360km, with several new lines and many new stations.

The government also aims to issue green bonds worth SGD 19bn (USD 14bn) to support the development of projects such as Tuas Nexus, Singapore’s first integrated water and solid waste treatment facility. This reflects its broader ambition to make Singapore a leading centre for green finance and sustainable finance generally, as well as a hub for carbon services and trading.

Singapore’s environmental record to date is mixed. It is still heavily reliant on fossil fuels and has so far made only slow progress towards meeting the environmental goals of the Paris Agreement. But the government has now unveiled its Green Plan 2030, with the aim of advancing sustainable development and reducing the country’s carbon footprint.

It has introduced several initiatives and targets in areas such as sustainability, solar power, electric vehicles, and innovation.

Given its limited supply of land, Singapore’s initiatives to quadruple solar power include large-scale rooftop solar projects and floating solar farms, both at sea and on the Tengeh Reservoir. The government’s goal is to have solar power capacity of at least 2GW by 2030, enough to power around 350,000 households.

The government has now unveiled its Green Plan 2030, with the aim of advancing sustainable development and reducing the country’s carbon footprint.

The government is also accelerating the development of Singapore’s public charging infrastructure for electric vehicles. And sustainable technologies are also central to the new Tuas Port, which will be the world’s largest fully automated container terminal when its fourth and final phase is completed in 2040.

Another new technology of interest is green hydrogen, with a variety of initiatives underway. A pilot project comprising a small self-contained power grid on Semakau Island is up and running, and Shell is assessing the feasibility of hydrogen fuel cells for ships in Singapore. Mitsubishi and Chiyoda are cooperating with several Singaporean companies on the transportation and storage of hydrogen, while Keppel Data Centres is working with a variety of partners to explore the possibility of using hydrogen to power its facilities. Although this technology is still in its infancy, there is a growing hope that hydrogen will play a substantial role in the achievement of Singapore’s sustainability goals.



Spotlight: United Kingdom

# Evolving policy landscape brings opportunities and challenges

The UK government announced a National Infrastructure Strategy in November 2020. An anticipated slew of further strategies, reviews and policy papers for areas including rail, energy, electric vehicle charging, hydrogen and decarbonisation will shape the future direction of the infrastructure sector and the legislative and regulatory environment.

In the meantime, much of the sector lacks visibility on the way forward, not least because there is still no replacement for the Private Finance Initiative and its successor schemes.

## **A funding gap?**

Launched in March 2021, the National Infrastructure Bank will fund private sector projects that tackle climate change and support regional and local economic growth, partly taking the place of the European Investment Bank post-Brexit. But with initial capital of just GBP 12bn it is unlikely to support as many projects as the EIB, potentially allowing private capital a greater role.

## **Social value**

Since 2012 England's public authorities have had to consider social value when awarding contracts. They are now required to give social value – including economic, social and environmental outcomes for communities – a minimum weighting of 10% in tenders. Social value must be included in contracts and outcomes measured.

Scotland has similar social value requirements (without the minimum weighting rule). However, the Scottish government may seek to enhance its requirements, given the increasing importance placed on social value and the need to show how communities benefit directly from public procurement.

## **ESG drives investment priorities**

The environmental, social and governance agenda is also evident in targets for greenhouse gas emissions. Planned legislation commits the UK to cutting emissions to 78% below 1990 levels by 2035.

Investment in renewables will receive a boost when the fourth Contracts for Difference allocation round opens in December, aiming to award up to 12GW of new capacity (more than double that of the previous round).





Spotlight: United Kingdom

# Evolving policy landscape brings opportunities and challenges



The secondary market for renewables has seen continued activity, with deals such as the sale of the transmission assets for the Hornsea One and Walney Extension wind farms for GBP 1.2bn and GBP 450m respectively, the sale of waste-to-energy business Wheelabrator UK, and KKR's GBP 4.2bn acquisition of waste and resource management company Viridor.

The National Infrastructure Strategy also supports investment in other areas relating to climate change, such as nuclear power (including small modular reactors) and flood defences, as well as newer technologies such as hydrogen, carbon capture and storage, and charging infrastructure to accelerate the adoption of electric vehicles.

## Major road and rail projects

Prospects for rail investment are mixed. The London-Birmingham HS2 line was given the go-ahead in February 2020, and in the autumn opened GBP 12bn of contracts to suppliers. A GBP 1.6bn rail link from Heathrow to south London will be opened to investors in the summer of 2021 – unusually it will be entirely financed and built by private investors and fully funded from revenues recouped from access charges paid by train operators. But budgeted

**The National Infrastructure Strategy envisages 'record investment in strategic roads' in England, with over GBP 27bn to be spent by 2025 on upgrades and significant projects.**

public funding for rail investment in the years to 2024/25 has been reduced by GBP 1.0bn to GBP 9.4bn, and a lack of visibility on the project pipeline limits the private sector's ability to plan.

The National Infrastructure Strategy envisages "record investment in strategic roads" in England, with over GBP 27bn to be spent by 2025 on upgrades and significant projects, such as the new Lower Thames Crossing, which will be Britain's longest road tunnel, and the controversial Stonehenge tunnel on the A303. Additional funding will be allocated for projects elsewhere in the UK.

## A regulatory boost for telecoms

The National Infrastructure Strategy has scaled back the government's pledge to roll out full-fibre broadband to the whole of the UK. The target is now for at least 85% of premises to have access to gigabit-broadband by 2025. But other developments are more encouraging for telecoms investors.

In March 2021 Ofcom, the telecoms regulator, relaxed price controls on fibre for Openreach, BT's broadband network which is also used by other service providers. Ofcom also introduced measures to stop Openreach restricting investment by other providers through its commercial practices. Both BT and its competitors now have ambitious plans to expand their networks.

Ofcom's latest round of spectrum auctions in April increased the capacity available for mobile services by nearly 20%.



# Africa

**39** Morocco  
**43** South Africa  
**49** Algeria

Closing the infrastructure gap is a key priority for Africa. It faces significant challenges to accelerate and scale up quality infrastructure. This is reflected in the Infrastructure Index rankings, where African countries place towards the bottom of the 50 countries.

Africa has a vast infrastructure gap. For example, over two-thirds of the global population without power are in Sub-Saharan Africa, and electricity consumption per person in Ethiopia, Kenya, and Nigeria is less than one-tenth that of the BRIC countries. Yet positive population and economic growth prospects, improvements in political

stability and regulatory reforms, make Africa increasingly attractive for private investment.

The region's attractiveness is bolstered by the African Continental Free Trade Area Agreement (AfCFTA) which came into effect in January 2021. The creation of a unified market, which encompasses over 1.2 billion people and has a combined GDP of approximately USD 3trn, is expected to foster new cross-border linkages and boost the continent's economies. The pan-African deal will spur opportunities for renewable energy, communications, and transportation investments in the region.

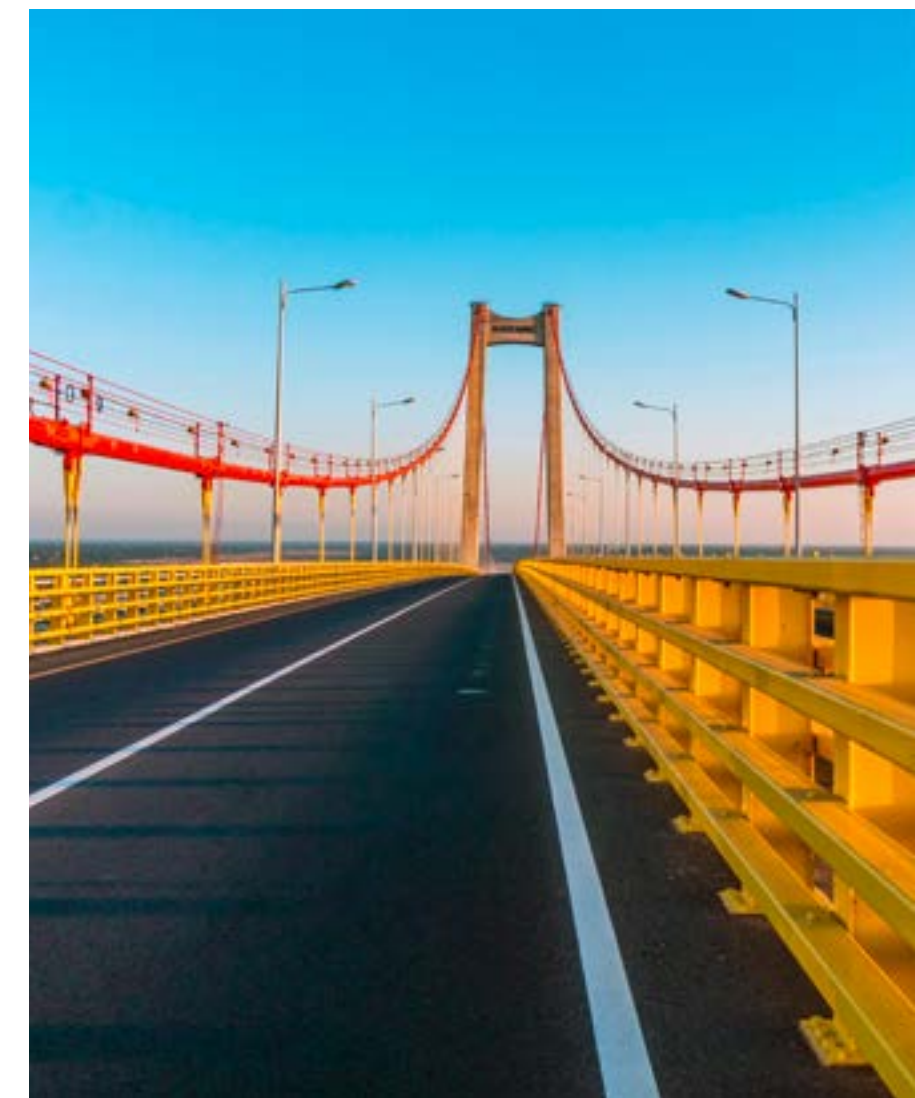
### Increasing presence of China

Official development assistance in the form of grants and concessional loans from development finance institutions (for example World Bank, European Investment Bank, African Development Bank, New Development Bank) remain an important driver of infrastructure and capital projects on the continent. However, with shorter response times in the deployment of funds and

competitive upstream project development processes, the importance of Chinese lenders for African infrastructure has continued to grow. Chinese investors also see strategic benefits from investing in Africa, like securing access to commodities and natural resources.

Most African nations have now signed up to the Belt and Road Initiative (BRI), and in December 2020, China and the African Union agreed to cooperate in promoting BRI – the first such agreement China has made with a regional international organisation. China has long-standing links with many nations in Africa and as well as financing projects and providing 5G technology, it has developed strong trade relationships across the continent, becoming Africa's biggest trading partner over a decade ago. BRI is one very important way that Africa's infrastructure projects can be implemented, but there remains the need for private international investors to support the level of investment required to close the infrastructure gap.

To view the detailed scoring for each country, please visit the interactive 2021 Infrastructure Index [here](#).







# Africa

## Opportunities in communications, energy, and transport

Digitalisation creates leapfrogging opportunities for the African continent. By harnessing technological innovation and digital technologies, policymakers and investors in Africa can address a few challenges facing the region. Places like Kenya are already seen as emerging FinTech and software development hubs, and Africa continues to be the global leader in mobile money services, for example. However, with nearly 300m people living more than 50 kilometres away from a fibre or cable broadband, significant infrastructure investments are still needed to allow African countries to leverage the digital space.

Thanks to digitalisation, the data centre market will grow strongly. Global tech companies are rethinking their data centre localisation strategies because of increasing volumes of data and local cybersecurity requirements. Other areas for communications investment include subsea cable landings and mobile masts.

Given the global prioritisation of ESG investments, there has been an increase in investment in decentralised energy systems and commercial/industrial solar and energy storage

solutions. However, investments in fossil fuel, such as gas, are still likely to be needed to provide the baseload electricity required to drive the economies.

Transport is also key in supporting Africa's economic development. Improved road and rail networks support the commodities extraction sector, a vital source of income for many African economies. Investments in border checkpoints are also critical to unlock trade between countries and to accelerate the creation of a unified market as part of the AfCFTA. Notable transport projects in the region include a PPP tender project for the construction of a USD 2.5bn bridge in Nigeria, which would connect the mainland and island areas of Lagos. At 38km long, it would be the longest bridge in Africa. And the Zimborders Consortium, made up of a group of investors from Zimbabwe and South Africa, has recently secured financing for the upgrade and modernisation of Zimbabwe's Beitbridge border post, the landlocked country's business port of entry and one of the region's key transit points.

## East Africa on the rise

An area to watch is East Africa. Some countries in the region are making steady progress

towards the UN Sustainable Development Goals. The broad and interdependent goals address challenges such as poverty, inequality, climate change and environmental degradation. They are seen as a blueprint to achieve a better and more sustainable future for all.

Moreover, there has been strong Chinese interest in this region, particularly in the establishment of special economic zones and strategic ports. An example includes the financing and construction of the Djibouti International Free Trade Zone in 2018. Several investments in the construction of railway lines have also been made as part of the greater East Africa Railway Masterplan. These projects link hinterlands to coastal ports and are essential to ease logistical bottlenecks as well as to accelerate global market penetration of manufactured goods from places such as Addis Ababa or Nairobi.

Institutional changes and legislative reforms in Kenya have created an environment conducive to foreign investment, making the country a rising star in the region. Recent grid development projects have put the country at the forefront of the renewable energy transformation. And notably, the Kenyan government is building

entirely new cities from the ground up, including the smart city Konza, and urban hubs Tatu City and Northlands City.

Further, the outlook for investments in social infrastructure is bright, with several healthcare and housing projects in the pipeline. Examples include a USD 39m project for the construction of 10,000 affordable energy and water efficient homes, as well as continuing investments from the private equity fund Investment Funds for Health in Africa and the International Finance Corporation to acquire and integrate targeted healthcare service businesses in Kenya and other East African countries. By 2025, the fund aims to serve 1.8m patients a year in five hospitals and 52 clinics.

Positive population and economic growth prospects, improvements in political stability and regulatory reforms, make Africa increasingly attractive for private investment.

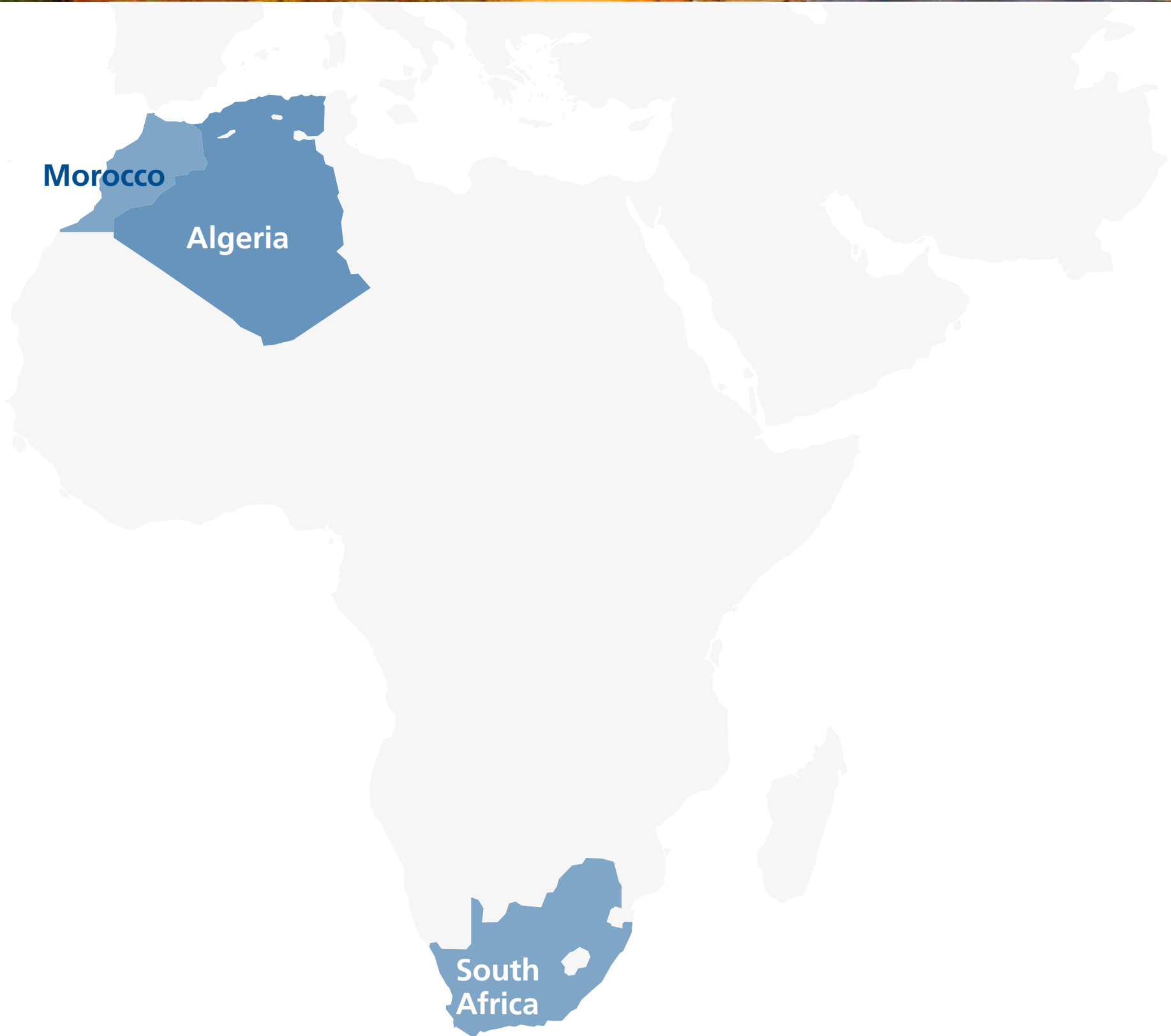




# Africa

## Country highlights

Click on a country name  
below to show information





# Africa

## CASE STUDY:

### Leveraging the power of green bonds

Green bonds aim to raise funds for environmentally aligned sustainable development projects and could thus play an important role in aiding the African continent in the mitigation of, and adaptation to, climate change risks.

In February 2021, the Development Bank of Southern Africa (DBSA), successfully issued the first green bond in its Green Bond Framework.

The EUR 200m bond was issued through a private placement with the French development finance institution, Agence Française de Développement (AFD).

This first green bond issuance is primarily intended to refinance selected projects under South Africa's renewable energy independent power producer procurement programme.

Future bonds could support projects in wind energy and smart grids as well as measures promoting energy efficiency.

"With more and more green bonds and sustainability-linked bonds being issued around the world, sustainable finance actively contributes to the transition to a low-carbon economy," commented Marc-Etienne Sébire, Partner at CMS, who advised on this deal.

Sustainable Finance actively contributes to the transition to a low carbon economy.





# Africa

## Market perspective: Alex Traube-Childs, General Counsel and Head of Compliance, InfraCo Africa



InfraCo Africa seeks to alleviate poverty by mobilising private sector expertise and finance to develop high quality infrastructure projects in sub-Saharan Africa. It is part of the Private Infrastructure Development Group (PIDG) and is funded by the national governments of the United Kingdom, the Netherlands and Switzerland.

Although publicly funded, InfraCo Africa is different to the development banks. It operates as a private company, through an innovative co-developer model whereby it partners directly with the private sector, providing much needed patient risk capital, development and asset management

expertise. An investment strategy and framework set by PIDG and agreed with its funders, enables InfraCo Africa to independently originate new projects, assess their commercial viability and developmental impact, and decide whether to invest. Substantial investment decisions benefit from the experienced input of PIDG's Investment Committee which is a balance of PIDG and independent industry leaders.

General Counsel and Head of Compliance, Alex Traube-Childs, notes that "PIDG and InfraCo Africa's funders have worked together over the last few years to put in place a governance framework which allows the PIDG companies to deliver on their funders' objectives and leverage one another's strengths whilst also devolving decision making so that InfraCo Africa can act nimbly, flexing its approach as needed by the market.

"Ensuring our projects are inclusive, safe and have a positive impact on people and the planet is really important to InfraCo Africa. Consequently, we invest time and resource in ensuring that our projects are developed, built and operated to a

high standard in respect to climate, gender, compliance, health, safety, environment and social, and of course robust governance." Traube-Childs notes that in the run up to COP26 and with the devastating impact of COVID-19 on economies and communities, this focus on inclusive, sustainable growth is more pertinent than ever.

Some of InfraCo Africa's more innovative projects include its East Africa Marine Transport investment alongside Grindrod in a roll-on/roll-off freight transport service across Lake Victoria, and a joint venture with Finnish company EkoRent Oy to support the expansion of its Nairobi-based electric taxi company, NopeaRide.

"InfraCo Africa as a vehicle is incredibly innovative in how it funds. We're very flexible in our approach and use a range of models and instruments and those instruments are effectively tailored to the individual needs of each project." As a development financier, it invests through debt, equity, convertible debt, convertible notes or other instruments like joint development agreements. "We're helping to





# Africa



solve some of the problems the private sector has in these challenging jurisdictions and making projects more attractive to investors.”

Traube-Childs says ESG is of fundamental importance to InfraCo Africa and is a key factor when making new investments. He notes “Development impact is critical and is embedded throughout the approval process for InfraCo Africa’s projects, however our mandate is not only to deliver much needed, transformative infrastructure, but to also mobilise private sector investment. We therefore also have to consider the commercial viability of projects. We know that when we first invest, they may be struggling to attract private sector investment, but our support should enable them to take the steps needed to unlock further investment. That might mean enabling green-field infrastructure projects to complete development or construction activities to a ‘bankable’ standard, or it might mean investing risk capital into an innovative infrastructure business that needs to scale-up or evolve its product to demonstrate commercial viability.

“Our ESG initiatives go over and above what you may sometimes see in other projects and we make sure we integrate those initiatives on the projects we invest in, working closely with the

project counterparties we invest alongside.” In the energy space, InfraCo Africa only invests in renewable power, and Traube-Childs says other developers in Africa are beginning to follow suit due to increased global pressure, especially in the context of the upcoming COP26.

Looking forward, he says the macroeconomic situation remains an issue for the region given the escalating debt position of certain governments. “We still don’t really know what the impact of COVID is. We know what it is on the health service and on lives, but financially it’s difficult to quantify at this stage.

“Governments are stretched, and we need to find new and innovative ways to unlock private sector capital and direct it towards the construction of these infrastructure projects, and that means helping with the development of local financial markets and new mechanisms to manage risk.”

“Governments are stretched, and we need to find new and innovative ways to unlock private sector capital and direct it towards the construction of these infrastructure projects.”



# Africa

## Market perspective: David Calaca, Investment Director, Pembani Remgro Infrastructure Managers



Pembani Remgro Infrastructure Managers (Pembani Remgro) is an infrastructure private equity investment firm, based in Johannesburg, with an established track record of infrastructure finance and transaction execution on the African continent.

The company currently manages the Pembani Remgro Infrastructure Fund I (PRIF I). With commitments of USD 302m, PRIF I focused on making late-stage greenfield and brownfield infrastructure and infrastructure-related investments throughout Africa. PRIM is currently raising its successor fund offering to PRIF I.

Demographic change in Africa will take place on a scale exceeding that elsewhere in the world, driving strong rates of economic growth. High birth rates suggest the region's population will overtake those of China and India by the middle of the century. This development will necessitate a meaningful uptake of infrastructure investment. In addition to the energy and transport infrastructure investment required, a focus of this increased infrastructure spending will be in information and communications technology (ICT).

David Calaca, an Investment Director at Pembani Remgro, says, "One thing we're seeing in Africa which is quite interesting is rapidly increasing demand for information and communications technology. Many African countries are looking to improve their service offerings and compete in the global economy. Over the last couple of years, there have been substantial amounts invested in ICT infrastructure, from data centres and sub-sea cables to fibre-optic networks and mobile phone towers."

Calaca says that places like Kenya are seen as emerging fintech and software development hubs. He highlights, as an example, the innovation of M-Pesa, the mobile phone-based money transfer service launched in 2007 by Vodafone Group and Safaricom in Kenya. Mobile banking products such as this have had a profound impact on the livelihoods of those who have been neglected by traditional banking systems.

Investment in ICT is both ahead of, and in response to, demand. Africa currently accounts for less than 1% of total available global data centre capacity, despite being home to 17% of the world's population. "Nigeria, for example, is very much an online society with over 100 million internet users, but capacity in terms of data centres is comparatively tiny," says Calaca. "Much of this investment is catch-up. But demand is certainly there, and big tech companies have recognised this potential and are moving in."





# Africa



Calaca also sees a strong ESG and impact investing theme emerging in the region. “A lot of investors see Africa as a place where they can really make a noticeable difference, particularly from an impact perspective,” he says. “The focus on ESG and impact investing is amplifying the focus on lowering carbon intensity and is catalysing investment in renewable energy. In addition, we’re seeing a lot of pressure being placed on funders at the moment to decline funding for carbon-intensive projects, particularly coal. The challenge we’re finding is meeting the increasingly high ESG and impact expectations of investors and at the same time making sure we don’t compromise returns.”

Calaca also highlights the opportunity for the use of gas as a transition fuel away from coal, particularly in South Africa, in light of the substantial gas reserves in neighbouring Mozambique. He notes, however, that certain investors are beginning to regard gas-fired generation as being too carbon-intensive. “This is unfortunate because numerous African countries are at the stage in their development where they need baseload power to grow their economies. Intermittent solar and wind energy often does not provide the dependability of supply that many African nations need.”

Infrastructure needs across Africa are great, yet some government balance sheets are incredibly strained, and the ability to fund many of the necessary large-scale infrastructure projects has diminished. This was the case even before COVID-19, which placed additional pressure on government finances. Calaca notes that governments across the region have realised the need to find other ways of funding infrastructure and are beginning to invite more private sector participation. “On the whole, African governments have become a lot more pragmatic. There’s much more recognition of infrastructure to further the development of their economies, and as a result they are seeking to attract foreign investment, from both public and private sources, and in certain instances are introducing much-needed reforms.

“One is seeing a strong decentralisation theme, where private investors are assisting by providing essential infrastructure to individuals and businesses. Notable examples include residential off-grid solar offerings and commercial and industrial solar projects. The transition to lower carbon intensity, combined with increased focus on impact and ESG, fits well with the decentralisation approach.”

“The challenge we’re finding is meeting the increasingly high ESG and impact expectations of investors and at the same time making sure we don’t compromise returns.”



# Americas

4	United States
8	Canada
22	Chile
34	Peru
36	Mexico
41	Colombia
45	Brazil

**Big spending plans**

Infrastructure investments will play a critical role in economic recoveries across the Americas. Governments in the region have announced unprecedented spending packages, with infrastructure investment at the centre of COVID-19 recovery efforts.

The largest proposed stimulus package of this kind comes from the United States, via President Joe Biden’s American Jobs Plan. This USD 2trn infrastructure package sets aside USD 620bn for transportation infrastructure, including USD 175bn for investment in electric vehicles. The plan would also impose gradually tighter restrictions on the use of fossil fuels to generate electricity, with the aim of making that sector carbon free by 2035.

In Chile, economic recovery plans unveiled by President Sebastián Piñera earmark USD 8bn for infrastructure, including funds for work on roads, water infrastructure, ports and airports.

The government also plans to speed up its concessions to push forward projects that have already been approved.

Similarly, Mexican president Andrés Manuel López Obrador reaffirmed his commitment to infrastructure spending by unveiling a second infrastructure investment plan in November 2020, worth approximately USD 11.4bn. The plan includes 29 projects to be developed in the communications, transportation, energy, water and environment sectors. There is an aim to finance public infrastructure projects in which the private contribution shall be at least 50% of the required investment.

Investment in social infrastructure, particularly hospitals, has been given particular urgency. P3 social infrastructure models are well-established in the region and they will likely play a greater role in the years ahead given that the pandemic has highlighted the critical importance of accessible health care facilities.

To view the detailed scoring for each country, please visit the interactive 2021 Infrastructure Index [here](#).





# Americas

## **Satellite technologies to help close internet connectivity gap**

Digital connectivity remains a challenge in Latin America in particular. While considerable investment has been made over the years to improve the region's digital infrastructure, only around 50% of households currently have access to broadband. Much of the investment focus so far has been on fibre to the premises and 5G.

While some countries are making great strides (Chile completed the first 5G spectrum tender in Latin America earlier this year), others that have greater income inequality and large rural areas are having more difficulty catching up. A proposed solution in addressing the digital divide is the development of satellite technology. With trials currently on the go in the US and Canada, the Starlink project – a US-based satellite broadband service – aims to improve satellite internet to Latin America. Starlink has begun procedures to operate in Mexico, Colombia, Chile, Argentina, and Brazil. Other countries in the region are also looking to space to help address the lack of digital coverage in more isolated areas, via the creation of national and regional space agencies.

## **A proposed solution in addressing the digital divide is the development of satellite technology.**

### **Energy transition continues to be a priority**

Countries across North, Central and South America are also continuing the push to the transition away from fossil fuels towards cleaner energies. There has been a huge drive within the region's mining industry towards embracing renewable energy procurement. Leading green hydrogen developers are working with Chile's copper mining industry to decarbonise heavy transport and introduce green ammonia for manufacturing mining explosives. Large mining companies are also embracing the use of solar energy to meet the demand of its high energy-intensive processes.





# Americas

## Country highlights

Click on a country name below to show information

- 
- 
- 
- 
- 
- 



North America



Central and South America



# Americas

## CASE STUDY:

### Chile – a climate-neutral fuels pioneer

An international group of companies is developing a commercial hydrogen-based e-fuel production plant in Chile.

E-fuels – also called synthetic fuels – are produced by using electricity to split water into oxygen and hydrogen. The hydrogen is then combined with carbon dioxide in a multi-stage process that ultimately results in a hydrocarbon fuel such as diesel.

The consortium of Siemens, Porsche, AME, Enel, and ENAP plans to construct the industrial-scale plant to produce climate-neutral fuels in the Magallanes Province in southern Chile. The project, which has also received EUR 8.2m of backing from the German government as part its national hydrogen strategy, will produce green hydrogen using wind-generated electricity.

The plant, Haru Oni, is expected to produce 130,000 litres of e-gasoline by 2022, with annual production being subsequently intended to expand to 55m litres in 2024, and 550m litres two years later.

The plant's primary customer will be Porsche. The car maker hopes to use the synthetic fuels produced in the project for motorsports and, going forward, also in high-volume production sports cars.





# Americas

## Market perspective: Jorge Centeno, Investment Director, Infrastructure, InfraRed Capital Partners, Mexico



InfraRed is an international private equity fund manager focussed on infrastructure investments, managing USD 10bn of equity capital.

Having successfully raised nine funds so far, InfraRed has developed over 80 greenfield projects and currently manages 200 infrastructure projects worldwide.

“The energy transition is probably the strongest theme we see across Latin America. We think there will be continued investment in renewables, but that will also trigger investment in flexible generation, energy storage and electrification of transport.”, says Centeno. While this trend is already well established in Europe and the United States, he believes it is starting to become a theme in LatAm as countries such as Chile and Colombia announce regulation and strategies aimed at promoting investment in these segments.

As many countries in the region are already advanced in their promotion and investment of renewables, Centeno says flexible generation and storage technologies are required to compensate for the intermittency of renewables and enable incremental penetration of renewables into electricity networks. Furthermore, cheaper and more reliable sources of power, alongside sustainability targets, will boost investment in electric transportation as a service.

LatAm is working to improve its digital connectivity through fibre to the premises and 5G, but also satellite wireless connectivity. “Satellite connectivity is already kicking off in the US, and we think that will be the lead for Latin American countries to promote it too.” Centeno sees densely populated areas becoming well served digitally by high-speed internet connectivity more quickly, but there will be an ongoing need for investment in newer, wireless technologies to connect the many rural and isolated communities across the region. He says, “We are already seeing some examples. Telefónica has partnered with KKR to lay out open access fibre across Chile and Starlink, the low latency, broadband internet

system being developed by SpaceX, has received a licence to start operating in Argentina, and we do think these are going to be trends that become widespread in LatAm.”

As a region, LatAm continues to have strong demand for social infrastructure: healthcare, education and transport. This is illustrated by major PPP programmes in countries like Chile, Brazil and Colombia. According to Centeno, “It’s nothing innovative, but we do think the pipeline of these type of projects continues to be strong. PPP is already well established in LatAm and a number of countries in the region have a long track record in procuring social infrastructure under these schemes.”

InfraRed has long been an investor in PPP projects. Currently, they have four such infrastructure projects on the go in LatAm and the Caribbean, including roads in Colombia and Aruba, along with a hospital in Turks and Caicos. “We do believe PPP is still appealing to investors,” says Centeno. “If anything, it has become very competitive, and returns have tightened in LatAm under PPP schemes. That’s great for countries

because they can attract competitive capital, but value-add investors with higher cost of capital will find it difficult to compete for these assets. Instead, value-add investors are shifting towards newer trends such as the energy transition, connectivity and circular economy”

According to Centeno, the impact of COVID-19 on infrastructure investments in Latin America has been similar to its impact elsewhere. “Energy markets have seen volatility in trade volumes and commodity prices, and transportation assets have experienced low traffic. However, infrastructure has once again proven to be a resilient asset class that is capable of delivering stable cashflow and consistent returns to investors even during times of significant turmoil in the global economy.”

Post-COVID, he sees no major changes to how InfraRed will assess potential infrastructure investments. “We will look at traffic forecasts and energy market fundamentals with incremental scrutiny, but we do not see major amendments in the structure of contracts. It is more about the assumptions that investors make when bidding for these types of projects.”



# Asia Pacific

- 1 Singapore
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- 12 Hong Kong
- 13 Japan
- 14 South Korea
- 20 China
- 29 Malaysia
- 31 India
- 32 Thailand
- 33 Indonesia
- 38 Kazakhstan
- 40 Vietnam
- 42 Philippines
- 47 Cambodia
- 48 Bangladesh

Boasting some of the strongest growth prospects in the world, many nations across the APAC region are attractive destinations for infrastructure investment, with a focus on green and digital technologies.

To view the detailed scoring for each country, please visit the interactive 2021 Infrastructure Index [here](#).

**LNG offers solutions**  
There are opportunities across the APAC region for infrastructure projects using liquified natural gas (LNG). With much of the region still dependent on coal for electricity generation, LNG can play a major role in the region’s energy transition and it can be used to plug the gaps which cannot currently be filled by renewable sources in the region.

LNG-to-power projects are taking off, particularly in Indonesia, the Philippines and Vietnam. Many of these new projects will make use of floating storage and regasification facilities as an alternative to traditional land-based terminals, as they offer shorter delivery times, greater flexibility and lower costs.

There are other applications for LNG. In May 2021, Singapore became the first country in Asia to complete a ship-to-ship bunkering of an LNG-fuelled oil tanker, as the maritime industry continues to switch to natural gas as a fuel source. The city state is also exploring the feasibility of using LNG to power data centres.





# Asia Pacific



## Solar and wind pick up pace

Although coal power projects are still being financed, renewable energy infrastructure investment across the APAC region is strong. While lagging Europe in their efforts to decarbonise, some of the largest emitters in the region, including China, Japan and South Korea, have recently set Net Zero targets. The last two years has seen unprecedented activity in the uptake of solar and wind projects, with Vietnam emerging as a regional renewables powerhouse within the South East Asia region. Favourable tariff policies and tax incentives to encourage investment coupled with a natural endowment of solar power had driven Vietnam to surpass Malaysia and Thailand to reach the largest installed capacity of solar panels in South East Asia.

## Making cities smarter

A growing number of smart city projects are developing in the region. Construction of a new capital city from the ground up in Indonesia, Nagara Rimba Nusa, is set to commence this year. The Japanese government announced plans at the end of 2020 to provide USD 2.4bn of funding to Japanese companies to develop smart city projects in 26 cities across South East Asia. The government

of India has pledged to create 100 new smart cities in the country. And China currently has roughly 800 smart city pilot programmes under way, which is more than half of the world total.

## Open for business

While many countries across the region have historically had relatively stringent FDI rules surrounding foreign ownership, particularly regarding infrastructure sectors of strategic importance, many nations have begun to loosen their stance. Governments across the region have recognised the need to bring in new policies to lower barriers to entry, particularly in the energy sector, and to encourage greater private sector participation in projects. Countries including the Philippines, Malaysia, Indonesia and Vietnam are all slowly unwinding FDI rules and streamlining processes to make investment in infrastructure more attractive to foreign investors.

Not all governments are moving at the same speed, or the same direction. Australia recently announced changes to its FDI law, meaning foreign investors will face greater scrutiny when bidding for sensitive assets.

Japanese and Korean investors will continue to play a large role in infrastructure investment in the Philippines, Singapore and Vietnam, where they have been active in the past. China, meanwhile, furthers its influence in the region through its Belt and Road Initiative (BRI) projects. With a renewed focus on digital and greener projects, Chinese investment through the BRI will be critical in helping the APAC region overcome its infrastructure gaps.

Countries including the Philippines, Malaysia, Indonesia and Vietnam are all slowly unwinding FDI rules and streamlining processes to make investment in infrastructure more attractive to foreign investors.



# Asia Pacific

## Country highlights

**Click on a country name  
below to show information**





# Asia Pacific

## CASE STUDY:

### Singapore pioneering green water treatment with floating solar

Singapore's National Water Agency, PUB, has teamed up with Sembcorp Floating Solar Singapore to construct a 60MW-peak floating solar photovoltaic (PV) system.

For densely urbanised countries of small landmass, the generation of green energy can be a struggle. Floating solar panels, with their minimal impact on water quality and biodiversity, are one option available to support those countries' sustainability efforts.

#### **Harnessing technology to reform water treatment**

In summer 2020, Sembcorp began construction of Singapore's first large-scale floating solar PV system at Tengeh Reservoir. The 60MWp system is one of the world's largest inland floating solar farms and is scheduled to be fully operational in 2021.

Over the coming 25 years, the facility of 146,000 solar panels is expected to annually offset 32 kilotonnes of carbon emissions.

The power generated will serve the energy needs of PUB's five local waterworks, adding Singapore to the handful of countries that achieve 100% green waterworks.

#### **Government takes the lead**

With this facility, the resource-scarce country demonstrates the power of harnessing technology in order to overcome land constraints. This project also underlines the vital role governments play in taking the lead to build national climate resilience for a more sustainable future, with PUB being the offtaker. This project ties in with the government's efforts to achieve emissions reduction goals as outlined in the Singapore Green Plan 2030.





# Asia Pacific

## Market perspective: Wee Ming Tan, Vice President Investment Banking, Macquarie Capital



Macquarie Capital is a leading global specialist in infrastructure, energy and utilities. The firm acts as an adviser, investor and developer, and has been at the forefront of infrastructure innovation for more than 25 years.

Wee Ming Tan is a Vice President in the firm's Infrastructure and Energy group. His team looks at investment opportunities across the infrastructure and energy space, covering a broad mix of asset classes from solar and wind to towers and data centres.

Tan sees the Asia Pacific region as a key destination for renewable energy investment. He says, "Macquarie has presence in a mix of both developing and developed economies

across the region. We see a great deal of activities across many of these markets, which shows that there is strong and widespread support for the energy mix to transition towards the use of renewables."

However, Tan notes that there are differences in terms of the incentives available to spur this investment. Developed economies, like Japan and Taiwan, have more generous fiscal support to provide incentives to attract private sector investment into renewable projects. Yet in terms of the overall policy intent, Tan says that it is quite consistent across the region. "There's a very welcoming and supportive environment for renewables overall."

In terms of the outlook for infrastructure investment across the Asia Pacific region, Tan believes that it's only going to get better. "From population growth to technology changes, the region is growing fast, placing huge constraints on existing infrastructure. This alone increases the need for infrastructure assets which support connectivity, including airports, trains, telecommunication assets and data centres."

It's also important to look at where the South East Asia region started out, which was a more restrictive environment for foreign investment. Tan explains that on the policy side, various governments are trying to loosen such restrictions to attract foreign capital. "There's only so much local capital can do," he says. "The natural way forward is to allow for more foreign capital to be invested in these economies."

"There's only so much local capital can do. The natural way forward is to allow for more foreign capital to be invested in these economies."





# Europe: Central and Eastern

- 15 Czech Republic
- 18 Slovakia
- 21 Poland
- 24 Hungary
- 27 Bulgaria
- 28 Romania
- 37 Russia
- 46 Ukraine

## Connectivity across borders and energy transformation are top priorities for nations in Central and Eastern Europe.

Infrastructure across Central and Eastern Europe (CEE) has improved markedly in recent years. The 2021 Infrastructure Index shows many countries in the region achieving significant improvements on their 2019 scores. Strong prospects for growth, coupled with sizeable infrastructure financing needs, will continue to make CEE an attractive destination for investors.

### Infrastructure programmes

CEE countries that are EU members benefit from several infrastructure development programmes, including the Next Generation EU instrument, established in response to the coronavirus pandemic, which will fund public investment under national recovery and resilience plans.

Another new source of finance is the Three Seas Initiative Investment Fund, backed by various CEE national development finance institutions. This made its first investments in 2020, buying a controlling interest in Greenery Data Centers, a CEE data centre platform, and Cargounit, a key player in the CEE railway industry. In 2021, it announced it had acquired a significant interest in Enery Development GmbH, an operations-led renewable energy developer. The fund is intended to complement and strengthen the capital deployment of individual Three Seas countries and EU financial instruments.

Some CEE nations have also signed up to China’s Belt and Road Initiative (BRI), although the amount of Chinese investment that has occurred varies significantly between countries, with many regional BRI projects being in smaller non-EU states.

### Bolstering connectivity

There is significant focus on connectivity – both physical and technological – across CEE. Regional policy objectives include strengthening EU

integration by enhancing the security of infrastructure supply and contributing to enhanced interconnectivity between EU member states. The rail sector in particular has initiated prominent cross-border projects, such as the modernisation of the Budapest-Belgrade line, and the construction of a line between Katowice in Poland and Ostrava in the Czech Republic. Work also continues on the Rail Baltica network, aimed at integrating the Baltic States into the EU’s rail network.

In contrast, despite the region’s good 4G coverage and relatively competitive fibre broadband availability, 5G penetration looks likely to be slow, with many programmes having been disrupted by the pandemic. While the CEE digital economy has been growing strongly, without additional investment in infrastructure its technological competitiveness may be at risk – although key digital leaders, such as Estonia, are likely to retain their strong positions.

### Energy transformation gathers pace

CEE countries are making great strides in the energy sector. Market participants expect to see a wave of EU backing for energy transformation projects. Decentralised energy systems are driving investment in networks, and climate change targets are spurring progress in areas such as renewable energy, waste-to-energy infrastructure and, in some countries, nuclear new build.

While the CEE digital economy has been growing strongly, without additional investment in infrastructure its technological competitiveness may be at risk.

To view the detailed scoring for each country, please visit the interactive 2021 Infrastructure Index [here](#).



# Europe: Central and Eastern

## Country highlights

Click on a country name  
below to show information





# Europe: Central and Eastern

## CASE STUDY:

### Eastern Europe embracing solar

Emboldened by the EU-wide expansion of renewable energy, many countries across Central and Eastern Europe are investing heavily in photovoltaic plants.

“The photovoltaic market in CEE has huge potential,” says Kostadin Sirleshtov, Managing Partner at CMS Sofia and Head of Energy and Climate Change for CEE. “It is going through the second wave and is expected to make solar capacity a cornerstone of the clean energy transition in this part of Europe. Due to the lack of subsidies available, it can be now considered as an ethical investment.”

#### Jinko Solar

At the forefront of green energy in CEE is Jinko Solar. The Chinese company became the world’s largest solar panel manufacturer just a decade after its foundation in 2006.

In Hungary, Jinko Solar is constructing the country’s largest PV power plant in Kaposvár. It is deploying half

of the high-efficiency solar modules needed to install the intended capacity of 100 MW. Valued at EUR 100m, the park in Kaposvár started commercial operations in February 2021.

The Kaposvár plant is supporting Hungary’s goal of energy transformation. With cooperation on environmental protection and green development projects, it is also an example of the success of China’s Belt and Road Initiative in the region as it was built by China National Machinery Import and Export Corporation (CMC), an engineering contractor owned by Chinese state-owned conglomerate China General Technology Group.

CMS advises Jinko Solar in 50 countries.





# Europe: Central and Eastern

## Market perspective: Christian Roy, Investment Director, Amber Infrastructure Ltd



Amber Infrastructure is a specialist infrastructure investment manager with 11 offices globally and some GBP 9bn of assets managed, including over 50 projects taken through construction into successful operation.

Amber was appointed as the exclusive investment adviser to the Three Seas Initiative Investment Fund (3SIIF) in early 2020. The 3SIIF, established in 2019, is a dedicated commercial fund targeting a pipeline of investments in 12 European Union CEE member states located between the Baltic, Black and Adriatic Seas.

A key priority of 3SIIF is to address connectivity issues within CEE countries. Christian Roy, an Investment Director at Amber Infrastructure, says, "From a historical perspective, the collapse of the Eastern Bloc in 1989 was followed by the

**"The gap created by the reduction in funding from the EU will provide room for private sector investors."**

development of East-West networks that served integration efforts and the creation of new supply chains with Western Europe. However, the North-South routes remained largely underinvested, despite the economic need for the creation of such infrastructure."

Projects are well underway. The fund's first investment in October 2020 was the acquisition of 'Cargounit', the largest independent locomotive leasing company in Poland. The Polish rail freight market is the second largest in Europe, after Germany, and Roy expects the market to continue to grow, with a large-scale modernisation programme underway promoting connectivity both in Poland and within the wider CEE region.

3SIIF also made its first digital investment in November 2020, acquiring a controlling interest in 'Greenery Data Centers', a CEE data centre platform. The first centre will be developed in Estonia and is expected to be the largest of its

kind in the Baltic region with up to 20MW of capacity upon completion.

The availability of structural funds from the EU is anticipated to diminish in the long-term as the CEE region becomes more prosperous. Yet Roy believes the prospects for infrastructure investment across the CEE region are bright. "The EU member states of the CEE form one of the fastest growing regions in the developed world, offering the attractive combination of comparatively high GDP growth with strong indicators of regional stability. Infrastructure investment needs have been estimated at more than EUR 500bn to 2030. This suggests a significant opportunity for infrastructure investment both from public and private capital.

"The gap created by the reduction in funding from the EU will provide room for private sector investors to take advantage of investment opportunities due to strong demand for

investments into infrastructure. In turn, this is expected to build a compelling investment case for institutional investors seeking long-dated, secure and diversified returns in one of Europe's most promising geographies."





# Europe: Western

- 2 Germany
- 3 Netherlands
- 6 United Kingdom
- 7 Norway
- 9 Austria
- 10 Finland
- 11 France
- 17 Belgium
- 19 Spain
- 23 Italy

Western Europe continues to be a strong market for infrastructure investment attractiveness. Countries in the region account for six of the top ten spots in our 2021 Infrastructure Index.

**The vanguard in the fight against climate change**  
At the heart of the region’s efforts to “build back better” post-COVID is an overarching commitment to transform the region from a high-carbon to a low-carbon economy. Norway’s USD 1.3trn sovereign wealth fund, the world’s largest, made its first direct investment in a renewable energy project in April 2021. The United Kingdom has committed to cutting carbon emissions by 2035. And as part of the EU’s EUR 673bn Recovery and Resilience Facility, European Union member states must allocate at

least 37% of national funding to green initiatives over the next seven years. This represents the largest single climate pledge ever made.

The EU has set legally binding targets for a bloc-wide goal of Net Zero greenhouse gas emissions by 2050 and a minimum 55% cut in emissions by 2030 (compared with 1990 levels). The programme includes incentives to encourage private sector investment and is aimed at economic growth and increasing jobs and prosperity. With targets for emissions reductions now legally binding, Western European countries within the EU have a mammoth task ahead. Strong action is necessary if the Paris climate agreement goals are to be met.

Central banks in the region have joined in efforts to address climate change, and to consider ESG considerations as part of their mandates. The Bank of England recently announced that it will no longer buy bonds issued by highly polluting companies, while the European Central Bank and Riksbank have pledged to buy more green bonds as part of their asset purchase programmes.

Fulfilling these green policy initiatives will be no easy task. In order to see these targets through, governments in the region will need to be flexible with how they fund these ambitions. While the role of state funding has increased in response to

the pandemic, many governments across Western Europe face huge deficits. Successful partnerships with the private sector will be crucial to make critical infrastructure projects more economically sustainable and viable.

To view the detailed scoring for each country, please visit the interactive 2021 Infrastructure Index [here](#).





# Europe: Western



While challenges exist, countries across the region continue to break boundaries in innovation. The Netherlands has had a focus on floating photovoltaic projects, with two floating solar parks recently completed in the country with a capacity of 29.2 MW. Austria has a number of examples of innovative projects in the pipeline – glass fibre projects are looking for private equity investors, a EUR 25m renewables investment in the construction of Austria's largest electrolysis plant, a EUR 30m investment for production of second-generation biofuels and OMV and Austrian Post have started to build infrastructure for hydrogen buses.

## **Pandemic reinforces need for reliable digital infrastructure**

The pandemic has underlined the need for fast and reliable internet connections at home. Western Europe's broadband infrastructure has coped relatively well in response to increased usage during the height of lockdowns, but policymakers have acknowledged that greater investment is needed to ensure the resilience of fibre-to-the home (FTTH) infrastructure. A number of countries in the region, including Austria,

**With targets for emissions reductions now legally binding, Western European countries within the EU have a mammoth task ahead.**

Belgium, the Netherlands, France and the United Kingdom, have announced plans for large-scale FTTH projects over the last year, with funding from these nations alone totalling over USD 10bn.

## **Supply issues lead to protectionism**

The pandemic has also highlighted the vulnerability of key sectors of economies. With borders closing, national manufacturing supply chains were challenged. Supply shortages during the height of the pandemic, particularly of medical products, have led policymakers in Europe to consider options for reshoring production, and to assess vulnerabilities in strategic sectors that might later be filled by an active industrial policy. However, many of these initial expectations of a shift in supply chains have since been downgraded.

While there is much to be positive about in the region, there is also a note of caution. The EU's Foreign Direct Investment (FDI) screening mechanism, which became fully operational in October 2020, allows for FDI in sensitive industries to be scrutinised to avoid the loss of critical assets and technology. A number of countries in Western Europe have made changes to their FDI rules in a bid to protect strategically important industries including infrastructure, technology, raw materials and healthcare. For example, Germany has recently amended its FDI screening rules, bringing parts of the healthcare sector under the regime applicable to critical infrastructure. France, Spain and Italy have also recently expanded their FDI regimes. It is unclear if these increased controls will impact investment in the region, but heightened scrutiny of deals and closer coordination of national governments are likely to ensue.





# Europe: Western

## Country highlights

Click on a country name  
below to show information





# Europe: Western

## CASE STUDY:

### Germany's largest PPP road project

Located at the heart of Europe, German motorways play a major role in facilitating frictionless trade within the region.

The A3 allows easy transport of goods from Dutch harbours to Austrian mountains. Despite its motorways' strategic importance however, the German government has been traditionally reluctant to spend heavily on its road infrastructure.

In spring 2020, a joint venture between Eiffage and Johann Bunte Bauunternehmung was awarded the contract for the EUR 1.5bn (USD 1.8bn) A3 motorway scheme. The project comprises the planning, widening, operation and maintenance of the motorway between the Biebelried and Fürth/Erlangen junctions, a distance of roughly 76 km. It is the largest road PPP project to be commissioned in Germany to date.

Approximately 80% of the total cost is financed by an international group of funders, with German KfW IPEX Bank acting as agent. CMS acted as adviser to the funders and, despite the challenges posed by the pandemic, agreements were successfully concluded. Construction began in 2020 and completion is expected by the end of 2025, improving the safety and capacity of a key German and European east-west road link.





# Middle East

16	United Arab Emirates
25	Qatar
26	Kuwait
30	Saudi Arabia
35	Oman
44	Turkey
50	Iran

To view the detailed scoring for each country, please visit the interactive 2021 Infrastructure Index [here](#).

Economic diversification, large sovereign wealth funds and long-term visions make the Middle East one of the most exciting regions for infrastructure development.

As the priority given to transitioning away from fossil fuels increases in many parts of the world, the economic imperative for the oil-and-gas-dependent economies in the region to diversify increases. And young, tech-savvy populations mean that digitalisation and creation of job opportunities are high priorities for governments in the region.

**Saudi Arabia is the one to watch**

Saudi Arabia is a main focal point of infrastructure investment in the region. For one thing, the country is by far the largest of the six Gulf Cooperation Council (GCC) members. The

Kingdom’s 35m inhabitants comprise 60 per cent of the GCC’s population and its economy contributes half the group’s output. For another, Saudi Arabia’s giga-projects provide a substantial pipeline of work. The developer of the 28,000 square kilometre Red Sea Project tourist resort awarded USD 4bn dollars of construction contracts last year alone, while Neom, a smart city project, is backed by USD 500bn of public funds. Although projects such as Neom are the obvious flag-bearers for digitalisation, Saudi Arabia is also continuing to strengthen its digital infrastructure by deploying 5G networks and investing in 6,500 new towers.

**Digital leapfroggers**

More broadly, though, the emergence of numerous ambitious greenfield projects and a ready supply of land for development in the region, will allow for digital infrastructure to be embedded in society by design and by default, rather than retrofitted into ageing pre-digital infrastructure. Countries are making the move to build on international best practice and leverage



...digital infrastructure to be embedded in society by design and by default, rather than retrofitted into ageing pre-digital infrastructure...



# Middle East



opportunities to transform, such as with the UAE's Smart Dubai 2021 project. Investment in logistics and transport is also expected across the region as well as in renewable energy and agri-tech. Digital technologies will be at the heart of all these developments.

The oil and gas sector will remain a substantial part of the Gulf economy for many years yet and will continue to offer investment opportunities. However, the transition towards renewables is also happening within the region. Saudi Arabia, which has some of the lowest cost solar schemes in the world, aims to generate half its electricity from renewables by 2030.

## **Ease of doing business limits region's rankings**

While investment opportunities in the region abound, the business environment can be challenging. The tendering process can be protracted in Kuwait, while a diplomatic three-and-a-half-year fallout between Qatar and its neighbours that resulted in sanctions and border closures only came to an end at the start of 2021. Protectionism is a factor to consider in Saudi Arabia, with entities wishing to work with the government required to be based in the country.

And, as part of the kingdom's 'Saudi-isation' policy, project bids must specify what element of employment generated will be for local people. Issues around the ease with which investment in the region can be conducted are not new and are accepted by many as part of the business environment. However, without them the region would score more highly in our rankings.

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# Middle East

## Country highlights

Click on a country name  
below to show information

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# Middle East

## CASE STUDY:

### Rail and digital infrastructure development go hand-in-hand in UAE

The UAE has combined the extension of its freight and passenger rail network with the expansion of high-speed fibre connectivity in a project developed by Etihad Rail.

As part of the installation of track infrastructure, a network of fibre optic telecommunications cables will be installed, connecting remote areas and thereby generating economic growth opportunities.

“Rail is an emerging sector in the Middle East which can play a key role in the growth of digital infrastructure,” says David Moore, Managing Partner of CMS UAE.

#### Etihad Rail fibre network

The Etihad Rail network will be the first and only full-scale freight and passenger rail network in the UAE. The network will connect the commercial and population hubs of the country and help to reduce reliance on

motor vehicles, with the freight capacity alone potentially reducing greenhouse gas emissions by 2.2m tonnes a year. The country’s role as an international transport hub will also be boosted and other parts of the economy supported, creating jobs and leisure opportunities.

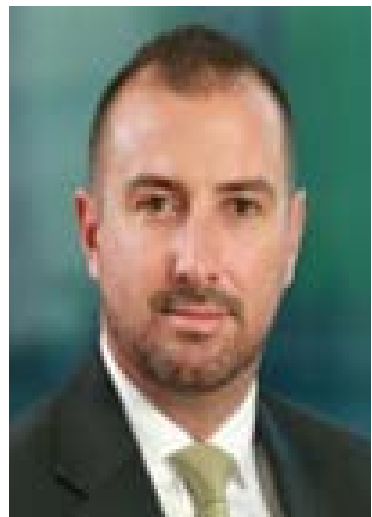
With state-of-the-art digital technology being deployed across the network and in the rolling stock, the fibre cable network is part of the digital-by-design nature of the infrastructure. The network will help to expand high-speed fibre connectivity to more remote parts of the country and support the growth of the digital communications sector.





# Middle East

## Market perspective: Dorian Reece, Partner, Government and Infrastructure, Deloitte Middle East



Through his role as Deloitte's Global Head of Airports, Dorian Reece has seen first-hand the impact the COVID-19 pandemic has had on infrastructure development.

However, Reece explains that while advisory spend ground to a halt (specifically related to airports), the pandemic has not resulted in the doomsday scenario for airports that many commentators anticipated early on. Government-backed airports received necessary support to keep operations afloat. Notably, many infrastructure funds with airport holdings were highly diversified which has helped them manage risk. "Infrastructure as a whole has held up relatively well this last year," says Reece. "So those funds holding a diversified portfolio of infrastructure assets have been able to smooth out the decline and get through the crisis."

The aviation sector in the Middle East further benefits, in some countries, from common ownership across components of the industry cluster. Reece comments, "You see a much more coordinated approach in addressing industry challenges in the Middle East. It is in the governments' interests to support the sector as a whole to find solutions and work together through these types of challenges."

As a partner in Deloitte's Government and Infrastructure team in Dubai, Reece and the team support governments across the infrastructure life cycle from strategy, options analysis, feasibility and ultimately bringing infrastructure transactions to market as well as supporting the private sector bidder side.

**"Those funds holding a diversified portfolio of infrastructure assets have been able to smooth out the decline and get through the crisis."**

Reece sees the infrastructure market in the Middle East maturing rapidly. He acknowledges that governments in the region view infrastructure as a key requirement not only to enable post-COVID recoveries, but also to diversify their economies away from hydrocarbon revenues to more productive sectors.

According to Reece, the biggest market in the region, Saudi Arabia, is at the forefront of infrastructure spend with established national programmes targeting FDI and increased private sector participation. The kingdom's advancing infrastructure privatisation programme has recently adopted a new PPP law and has established the National Centre of Privatisation which is supporting government entities to engage with the private sector. This will help bring transactions to market, ensuring they align with the kingdom's strategic objectives and are appealing to the private sector. Particularly, there are large scale requirements across power, transport and social infrastructure.

Reece believes that a core element of the inward investment that Saudi Arabia is seeking to attract through privatisation is not just for the sale or

funding of assets – he notes that the kingdom has a low cost of financing. It's more about bringing in capabilities and efficiencies to deliver best-in-class services. "What they are really looking to do," Reece says, "is bring inbound skills so that service standards increase and the overall cost to service these assets is reduced."

One way in which this skill transfer can be accomplished is through the development of joint ventures, in which Reece sees a growing interest in the region. While joint ventures often require more effort in understanding risk allocation across respective parties compared to the more common PPP models, Reece believes that part of the appeal lies in the closer working relationships between entities. "The ability to locally create and own for the future is part of what the region has learned from the missteps of historic PPP programmes. If parties are able to establish a model that enables knowledge transfer and local content and innovative solutions development, this will result in a longer lasting positive impact to these countries."



# Methodology



This Infrastructure Index provides an effective tool for identifying the attractiveness of 50 countries around the world for infrastructure investment. This report presents results for two aggregate measures: the Infrastructure Index score and the Infrastructure Index ranking, which is based on the Infrastructure Index score. The scores measure an economy’s performance with respect to six main indicators and seventeen sub-indicators. These scores have been calculated using an indexing methodology called ‘distance to frontier score’, which captures the gap between an economy’s performance and a measure of best practice across a wider sample of countries. A score of 100 signifies best performance, while a score of 0 signifies worst performance.

The methodology adopted in the 2019 edition of this report has been largely retained, although data sources and weightings have been updated to reflect global market developments. 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 here.

Economic status	28%	▶	4% Annual trade and GDP 19% Credit rating and outlook 5% Interest rates
Sustainability and innovation	16.5%	▶	5% Environmental performance 2.5% Innovation 9% Quality and condition of infrastructure
Tax environment	7%	▶	3% Corporate tax rate 1% Resource drain 3% Complexity
Political stability	19.5%	▶	10% Governance and stability 2% Rule of law 7.5% Regulatory stability
Ease of doing business	12%	▶	5% Transparency / corruption 7% Ease of doing business
Private participation	17%	▶	5% Procuring infrastructure PPPs 5% Gross fixed capital formation 7% Private investment



# About the contributors



## CMS

CMS lawyers work across sectors and borders in more than 40 countries worldwide, delivering expert, pragmatic, business-focused advice, and innovative, industry-shaping solutions that help you move forward with confidence.

CMS lawyers are genuine experts in their fields and are ranked top tier across infrastructure, energy and technology, with a grasp of detail that's second to none. That depth of knowledge gives us the ability to anticipate challenges – and our collective experience gives us the ability to meet them in innovative and sector-shaping ways.

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## Capital Economics

The Capital Economics consultancy team regularly provides bespoke macroeconomic research to help support due diligence on a project by project basis for investment consortia, banks, infrastructure funds, real estate investment firms and private equity. Capital Economics is one of the leading independent economic research companies in the world. The team of more than 60 experienced economists provides award-winning macroeconomic, financial market and sectoral analysis, forecasts and consultancy, from offices in London, New York, Toronto, and Singapore.

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## GIIA

GIIA is the membership body for the world's leading infrastructure investors and the advisors to the sector. Its aims are:

- Make the case for private investment in infrastructure across the world through evidence-based advocacy;
- Promote improved understanding and dialogue between governments and the private sector to create the right environment for private investment;
- Foster a community of infrastructure professionals to collectively shape the future of the sector.

On behalf of members, the three key areas of focus are: advocacy, market insights and member engagement.

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