



INFRASTRUCTURE

Resilience and transition

Infrastructure Outlook

April 2022

ifm
investors

Multiple disruptions are shaping the infrastructure sector, including the global net zero focus, funding shifts driven in part by government stimulus packages and digital transformation.

As one of the world’s largest infrastructure investors, with portfolio assets spanning more than 20 countries, we have spent more than 25 years analysing and understanding the dynamics that shape the industry. We also contribute to these dynamics through our investment and active asset management activities, which we undertake in our efforts to protect and grow the long-term retirement savings of working people.

We have observed that some of the macro

trends that have been shaping the industry over the last decade are now converging and accelerating – as a result of the impact of the COVID-19 pandemic. While the impacts are still continuing, this period has heightened the industry’s focus on resilience and transition, which we expect to continue for some time to come.

Leveraging the expertise of our global infrastructure team, asset management experts and public policy advisers, this report looks at some of the overarching forces that we believe will shape the sector over the next 12 months. We’ve flagged four areas we believe investors will hear a lot about over the coming year and which may create investment opportunities.

FLAGS FOR INFRASTRUCTURE INVESTORS Four areas to watch

The image shows four dark teal circular icons arranged horizontally. Each icon contains a flag number and a description of the area to watch, with a reference to a page number in parentheses.

- FLAG 1**
2050, 2030 or today: decarbonising existing portfolios (page 4)
- FLAG 2**
Brown-to-green: alternative energy sources (page 7)
- FLAG 3**
Fibre, data centres and the digitalisation of infrastructure (page 10)
- FLAG 4**
Increasing scope for public-private partnerships to build back better (page 11)

The macro environment - COVID-19 recovery

COVID-19 has impacted sectors in our portfolio to varying degrees (see Figure 1). Assets focused on the transportation of people were particularly affected, with airports experiencing significant passenger reductions. As vaccination rates increase and travel, border and quarantine restrictions ease across regions, passenger numbers have been rising. However, the sector’s recovery remains uncertain given the emergence of new COVID-19 variants and renewed restrictions. Across our toll-road assets, traffic recovery has been firmly underway led by heavy-vehicle traffic that is linked with the flow of consumer goods and industrial production. Ports continued to show resilience, however, with ongoing supply chain disruptions, experience has been mixed. While other assets that have counter-cyclical drivers, such as certain midstream assets, have performed well.

Focus on supply chain resilience

Global supply chains already strained by the pandemic, have been tested further by flow-on impacts from Russia's invasion of Ukraine. The vulnerabilities highlighted through this period may prompt businesses to prioritise supply chain resilience over efficiency.¹ More broadly, countries may become increasingly vigilant around sovereignty over key supply chains and sectors of the economy, such as energy, agriculture, health and defence.²

IFM believes some infrastructure assets with large land banks (ie significant available land for development), such as certain airports and seaports, may be well placed to support the creation of further industrial precincts. For example, at Melbourne Airport, an asset in our Australian infrastructure portfolio, world-

¹ www.imd.org/research-knowledge/articles/the-localization-of-global-supply-chains-amid-the-pandemic/

² www.infrastructureinvestor.com/ifm-investors-michael-hanna-countries-may-be-increasingly-vigilant-over-key-sectors-of-the-economy/

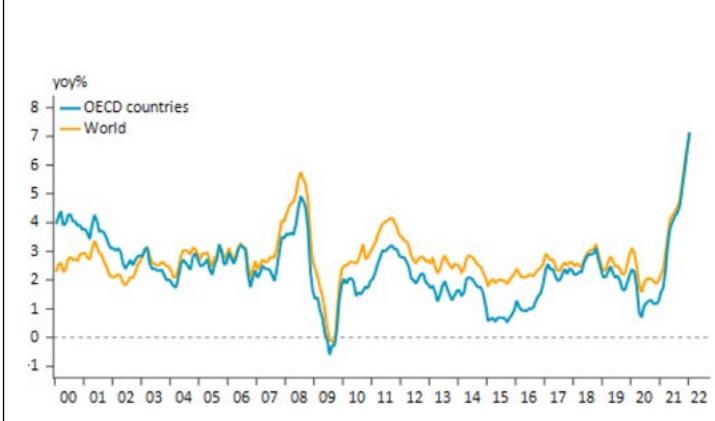
FIGURE 01 IMPACT OF COVID-19 ON INFRASTRUCTURE SECTORS



Three ways rising interest rates can impact infrastructure investments

- 1 Impact on asset financing costs and capital structures
- 2 Effect of accompanying changes to inflation and economic growth
- 3 Impact on infrastructure equity discount rates

FIGURE 02 GLOBAL INFLATION



leading influenza vaccine company, Seqirus – a part of the CSL Group - is building a new \$800 million vaccine manufacturing facility and expects to start operations in 2026.

Coupled with the global e-commerce boom, demand for industrial land is at record levels, with potential industrial clients particularly attracted to the close linkages to global freight supply chains offered by certain seaport and airport land holdings. This could provide further diversification for those businesses.

Impact of rising inflation

Government fiscal and monetary policy has played a crucial role in supporting communities, businesses and the economy through the pandemic. Global growth has recovered well, but ongoing supply constraints have seen inflation accelerate (see Figure 2). Central banks initially

expected rising inflation to be transitory and that it would decelerate as strong demand (supported by fiscal policy) and increasing supply found an equilibrium. However, inflation has proved unexpectedly persistent and the outlook remains uncertain, with the Russia/ Ukraine conflict complicating matters further. Nonetheless, lower potential growth, moderate levels of inflation and higher debt levels suggest that interest rates will cycle around a structurally lower average level.

Infrastructure assets are well-positioned to perform in higher inflation environments and manage increases in interest rates. Generally, the performance of infrastructure assets is positively correlated to inflation. This typically is driven by a combination of factors including inflation-linked rate setting mechanisms and GDP-linkage.



FLAG 1

2050, 2030 or today: decarbonising existing portfolios

With hundreds of the world's largest businesses and more than 130 countries setting net zero or carbon neutrality policies,³ emissions targets are creating challenges and opportunities for infrastructure investors.

The targets, together with government policy, may intensify pressure on investors to decarbonise their portfolios and create opportunities to invest in new infrastructure. For instance, prominent technology companies have sought to reduce the carbon impact of their corporate operations through installing renewables on their premises or through power purchasing agreements for energy generated from renewable sources, which, in turn, creates opportunities for investments in infrastructure. Similarly, significant opportunities exist in transitioning existing infrastructure to meaningfully participate in a net zero economy.



IFM's own focus on net zero infrastructure started almost two decades ago. It first invested in renewable energy in 2005 with the acquisition of Pacific Hydro, a global developer of hydro-electric projects. Since then, in addition to other acquisitions, it has worked with portfolio companies to develop renewable energy assets and other carbon reduction initiatives. Most recently, building on its ESG Strategy, IFM set a target to reduce its Scope 1 and 2 emissions by 1.16 million tonnes by 2030 (from a 2019 baseline) and achieve net zero by 2050.

Supply-side opportunities

To achieve net zero, the entire energy ecosystem will need to undergo a profound transition (see Figure 3), which will require unprecedented levels of new investment in infrastructure. This will require meticulous planning, especially in ensuring energy certainty, and tackling intermittency issues through the continued evolution in the use of transition fuels, batteries and other technologies.

In its Net Zero by 2050 scenario, the International Energy Agency says that by 2030 close to US\$4 trillion will be needed annually for clean energy infrastructure and projects.⁴ While governments are committing increasing amounts to sustainable infrastructure to reach the level of investment required, IFM believes the private sector has a long-term role to play.

Today, the green infrastructure universe is mainly renewables and the transmission lines required to connect energy supply to meet demand. IFM believes this infrastructure is a critical pillar and the foundation to achieving a net-zero economy. As demand for these types of assets has risen, the supply of assets and investment opportunities has also seen a notable increase, and is likely to grow further as more countries commit to ambitious emission-reduction targets. Moreover, the market is evolving quickly and the energy transition opportunity set continues to expand beyond renewables.

The opportunities IFM sees emerging include:

- an increasing take up of low carbon fuels (such as biofuels and hydrogen)
- infrastructure investments that support electrification (including creation of grids to accelerate connection to offshore wind and electric vehicle charging stations); and
- selected carbon capture and storage facilities.

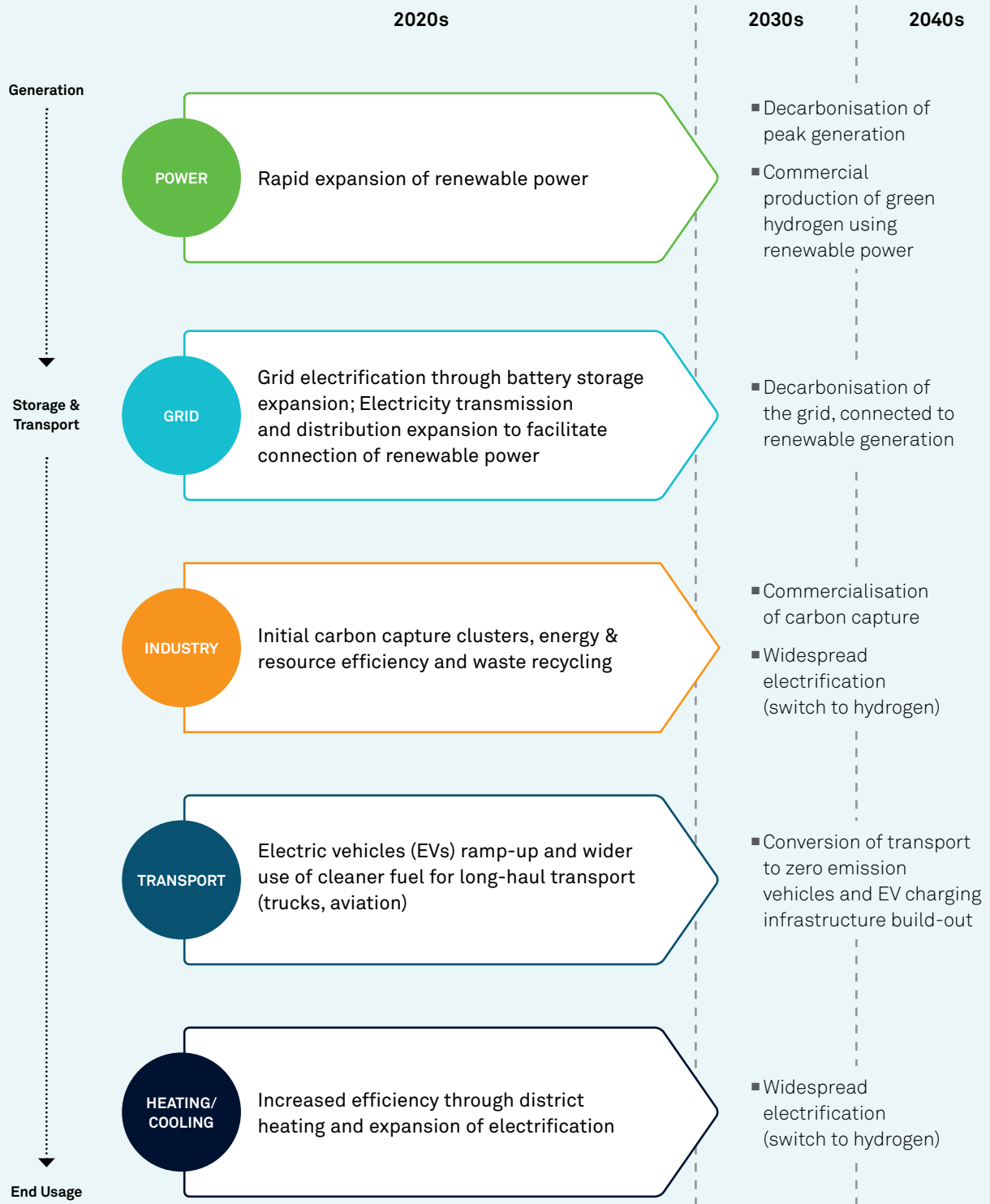
Competitive asset acquisitions are not the only way to participate in the new project supply, with platform models becoming an increasingly common strategy to generate alpha and achieve higher returns than typical standalone financial investments.

³ <https://zerotracker.net/>

⁴ www.iea.org/reports/world-energy-outlook-2021/executive-summary

FIGURE 03

To achieve net zero, the entire energy ecosystem will require a profound transition



Source: IFM analysis



Transitioning assets rather than divestment

According to some estimates, half of the global infrastructure of 2050 is already built, under construction or being planned,⁵ implying that active transition strategies will be necessary to meet carbon reduction targets. IFM believes that the role of existing infrastructure in a net zero world is significantly understated. There are, and will continue to be, attractive investment opportunities in transitioning infrastructure assets to generate long-term investment returns. Asset divestment forgoes these long-term investment opportunities and, by not addressing the problem, does not achieve the emissions reductions that are possible through responsible asset stewardship.

Although a necessary task, transitioning infrastructure assets to a net zero economy is complex and challenging. Decarbonisation pathways are likely to be different for each asset and will depend on many factors, including: the source of the emissions; the level of control the asset has over the emissions; the commercial viability of existing abatement options; technological advances; and the prevailing policy and regulatory environment.

Nevertheless, we see real opportunity in repurposing traditional infrastructure for alternative uses in the long-term, and leveraging the extensive operational experience and expertise within those companies to diversify and transform their respective business models. Assets such as seaports and airports may also play a key role by constructing supporting infrastructure that facilitates the transition in hard-to-abate sectors, including global shipping, heavy industry and long-haul aviation.

Energy security and an orderly transition

Prompted by Russia's invasion of Ukraine and the global spike in fuel prices, governments globally are examining options to enhance energy security, which is even more important now. In the EU and UK, especially, the geopolitical imperatives for developing renewable energy have become clearer and industry commentators have flagged the potential for these events to provide a catalyst in accelerating investment in the net zero transition.

In the short term, however, we may see increased use of coal and other fossil fuels as markets look for substitutes for Russian products and as governments look to protect the poorest members of society from increases in the cost of fuel, food, heating and cooling.

More broadly, fossil fuels are expected to have

a role to play across the globe in enabling energy security for some time to come, and in supporting an orderly transition to net zero as technologies for climate solutions mature and are scaled up. Critically important sectors such as global shipping, heavy industry and long-haul aviation are difficult to abate carbon emissions from. This is due to the limitations of existing energy transition technologies. Additionally, even as technology improves, global industry-wide adoption of such technologies will take time to achieve due to long lead times and the sheer scale of the transition. Adoption of such technologies will likely also be uneven across the globe, with developed countries having far greater capacity to undertake such shifts in key economic industries in the short term compared to developing countries.

Similarly, the effect of the energy transition on market participants will be uneven, with marginal firms more heavily affected than strategic market leaders. As the energy transition progresses, these uneven impacts should be expected to continue. Infrastructure asset managers who take a long-term view of the energy landscape are well positioned to seize emerging opportunities to transition assets into new business models as the world continues to pursue lower greenhouse gas emissions.

PORTFOLIO EXAMPLE

Steps towards transition

Veolia Energia Polska (VEP), heating and steam company, UK/Europe has converted coal units to biomass in the cities of Łódź and Poznań. The conversion has resulted in an annual 10 – 12% emissions reduction for the company, equivalent to 350,000 – 400,000 metric tonnes of carbon emissions a year.

NSW Ports (Port Kembla), seaport, Australia has signed an agreement with Squadron Energy to construct Australia's first LNG import terminal at the port, which will help meet the state's gas needs. As part of the energy transition, with a massive increase in the take-up of renewable energy across the state, significant coal generation retirements are expected. Further discussions are underway with the NSW Government to construct a gas-hydrogen co-fired power station at the port.⁶

Melbourne Airport, Australia has completed a 12-megawatt (MW) solar farm on 19 hectares (47 acres) of airport land. This is the largest behind-the-meter solar farm at any Australian airport, and is expected to generate up to 15% of the airport's annual electricity consumption - enough to power all four passenger terminals.

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⁵ www.github.org/articles/net-zero-infrastructure/

⁶ www.planning.nsw.gov.au/News/2021/Proposed-Port-Kembla-power-station-declared-critical



Brown-to-green – alternative energy sources

To achieve global net zero ambitions, the energy mix for the transport sector is expected to shift over the long term to employing clean and renewable sources of energy. A scenario developed by the International Energy Agency is useful in highlighting the directional step change that is required across the sector over the coming decades (see Figure 4).⁷

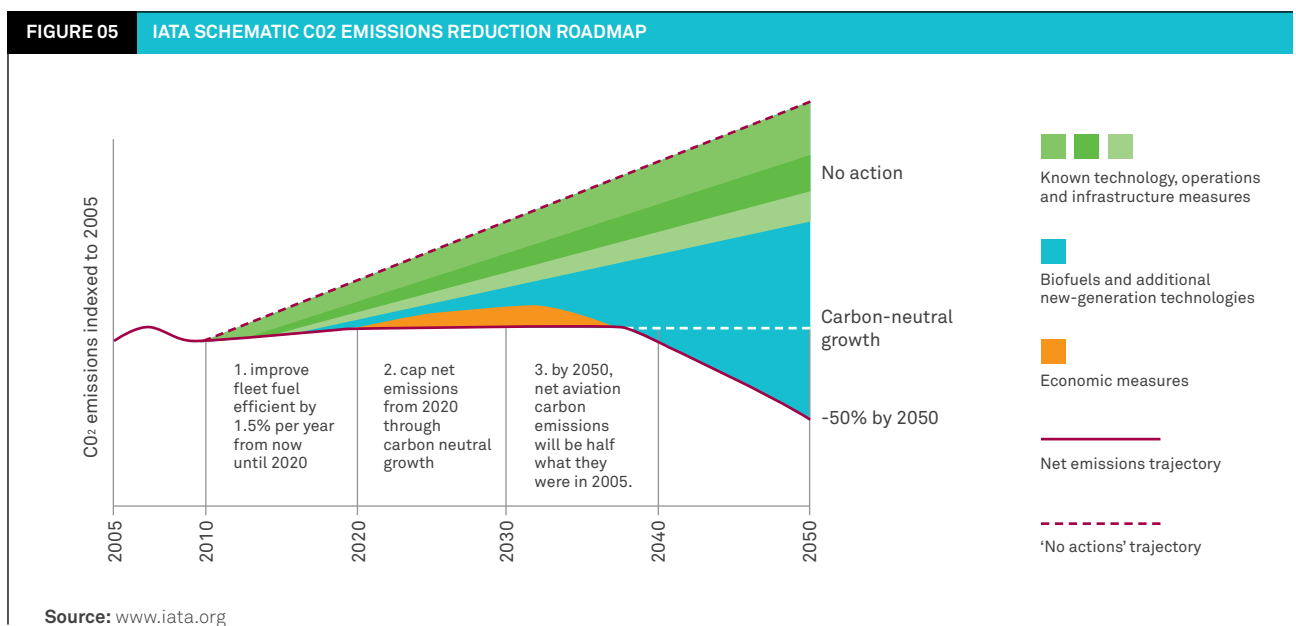
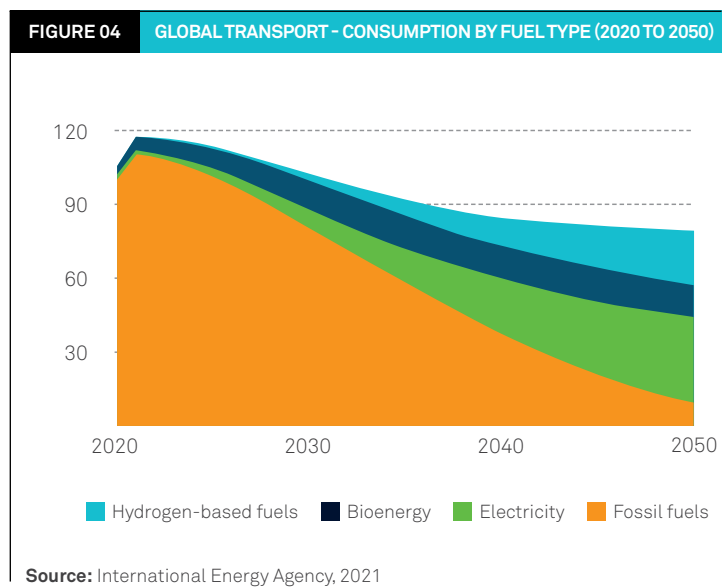
Much focus has been on the electrification of road transport; however, significant efforts are also being made to decarbonise the aviation industry. While new aircraft technologies have a role to play, keeping pace with expected long-term demand for air travel will require additional solutions.

Sustainable aviation fuels

Alternative fuels, including sustainable aviation fuels (SAFs), have been identified as a potential solution for helping meet the industry’s climate targets (see Figure 5). Part of the broader category of biofuels, SAFs can be safely mixed with conventional jet fuel, use the same infrastructure and do not require aircraft modification.⁸

The International Air Transport Association (IATA) expected that production could potentially be in the billions of litres by 2025

under optimal conditions and with appropriate policy support.⁹ Countries across Europe, for instance, are looking at supportive policy changes with various governments having defined and implemented SAF 2030 mandates to support the shift to biofuels, with an EU-wide mandate expected from 2025.¹⁰



⁷ www.iea.org/reports/net-zero-by-2050
⁸ www.iata.org/contentassets/d13875e9ed784f75bac90f000760e998/saf-fact-sheet-2019.pdf
⁹ www.iata.org/en/programs/environment/sustainable-aviation-fuels/
¹⁰ www.iata.org/contentassets/d13875e9ed784f75bac90f000760e998/fact-sheet---us-and-eu-saf-policies.pdf

Manchester Airport becomes first UK airport with direct sustainable jet fuel supply

Manchester Airport Group (MAG) recently announced a partnership with Fulcrum BioEnergy to support the development and delivery of SAF produced at a new waste to fuels bio-refinery. SAF will be delivered to Manchester Airport through an existing pipeline.

The partnership could see up to 10% of the fuel used by aircraft at the airport replaced with SAF within five years of the new facility becoming operational. The facility will produce approximately 100 million litres of SAF per year. The fuel produced will have a CO₂ footprint at least 70% lower than that of its traditional jet fuel equivalent and will be produced from non-recyclable household and commercial wastes. Once blended and certified, the SAF can be used in aircraft without the need for modifications.

MAG will explore opportunities to supply SAF to its other airports at London Stanstead and East Midlands.



A number of cross-functional coalitions across various regions are also forming to support the take-up of SAFs, with various airlines announcing commitments as well. British Airways, for example, as part of International Airlines Group has committed to powering 10% of flights with SAF by 2030.¹¹ Ryanair is targeting 12.5% over the same timeframe.¹² American Airlines has announced SAF commitments totalling more than 120 million gallons, signalling the integral role SAF will play in its sustainability strategy this decade.¹³ Similarly, Australia's national carrier Qantas recently announced it had signed an agreement to purchase 10 million litres of SAF in 2022 with an option to purchase up to another 10 million litres in 2023 and 2024 for flights from Heathrow Airport. This represents up to 15% of its annual fuel use out of London.¹⁴ Successfully scaling up SAF will require a step change in the level of collaboration between airports, airlines, governments and producers, but doing so has the potential to create wide-ranging, long-term benefits.

Emerging opportunities in hydrogen

While still very early stage and not imminent, hydrogen may become increasingly important to the decarbonisation of heavy industry and transportation over the medium term, including aviation by serving as feedstock for the production of e-fuels. By some estimates, as applications grow over the next 30 years, the hydrogen market could potentially expand more than five-fold to over 500m tonnes.¹⁵

Although nearly all hydrogen today is produced from fossil fuels without carbon abatement (known as "grey" hydrogen), the industry is committing substantial resources to uncover ways to increase the economic viability of cleaner hydrogen. Development of economical methods to generate less carbon-intensive forms of hydrogen will be critical to enabling widespread adoption.

Investors may be aware that green hydrogen (produced through an electrolysis process powered by renewable energy) and blue hydrogen (produced by gas reforming with associated carbon capture and storage) are

¹¹ <https://mediacentre.britishairways.com/news/03122021/british-airways-and-phillips-66-agree-first-ever-uk-produced-sustainable-aviation-fuel-supply>

¹² <https://corporate.ryanair.com/news/ryanair-trinity-college-launch-saf-centre-ryanair-commits-to-12-5-saf-goal-by-2030-2/>

¹³ <https://news.aa.com/news/news-details/2021/American-Airlines-Makes-Additional-Commitment-to-Sustainable-Aviation-Fuel-CORP-OTH-12/default.aspx#>

¹⁴ www.qantas.com/agencyconnect/au/en/agency-news/agency-news-december-21/qantas-purchases-sustainable-aviation-fuel-for-kangaroo-route.html

¹⁵ The Economist, The hydrogen economy: a very big balancing act, 2021

featuring in net-zero strategies globally.¹⁶ Potential for high growth and strong ESG impact are part of hydrogen's appeal to investors. Infrastructure themes best positioned to capture emerging opportunities in hydrogen include new green hydrogen electrolyser installations; renewable energy to produce green hydrogen; as well as (in some geographies); gas processing and carbon storage infrastructure.

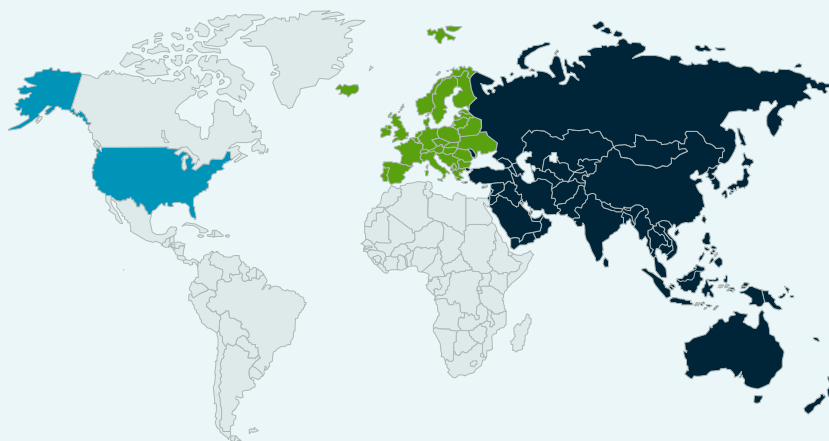
Existing infrastructure, with investments made to enable compatibility, has the opportunity to benefit from an increase in

the use of hydrogen. For example, selected gas grids and pipelines may benefit from future product transportation opportunities, while storage terminal operators could benefit from new opportunities in ammonia storage or underground gas storage. Multiple opportunities will likely also arise in the long-term in end-user mobility and heating services.

The take up and end uses of hydrogen will vary across regions (see Figure 6). Encouragingly, we are already seeing policy and regulatory attention on this topic.

FIGURE 06

Hydrogen uptake will vary across regions



US

- Series of federal and state incentives, mostly via tax credits
- Set of incentives for mobility - encouraging the installation of fuel cells and hydrogen fueling infrastructure
- Growing network of hydrogen-powered fork-lift trucks and plans for road trucks
- Policy to support hydrogen production evolving
- Market participants predict high share of blue hydrogen

ASIA/AUSTRALIA

- Diverse set of policies
- Japan and South Korea in the lead with a strong set of policies
- China sets targets with details yet to emerge
- Australia recognises potential to produce and export green hydrogen

EUROPE

- Leader in promoting hydrogen production
- Many countries have introduced a production subsidy regime
- Green hydrogen receives the lion's share, blue may be selectively supported
- Industrial off-take dominates
- First projects are "closed-cycle" (producer-dedicated pipe-industrial user)
- Emerging midstream solutions, largely based on current gas grids
- Landmark German subsidy announcement in May 2021: Eur 8 bn across 62 projects, covering not only production but midstream and mobility

¹⁶ www.icf.com/insights/energy/hydrogen-power-zero-carbon-future

FLAG 3

Fibre, data centres and the digitalisation of infrastructure

In the ongoing transition to a digital world, technology and data are increasingly central to many aspects of daily life. As a result, internet traffic growth will likely continue to accelerate with global networking solutions company Cisco expecting year-on-year growth of 25-30% between 2017 and 2022.¹⁷ This represents a greater than threefold increase of internet traffic over the five-year period, driven by mass adoption of internet video and the demand for bandwidth-intensive applications growing. Furthermore, having been created prior to the global pandemic, these forecasts do not take into account the significant impact of COVID-19 on the proliferation of internet use and remote working.

Cisco also expect that the number of devices connected to IP networks will outpace the global population by more than three times by 2023, as new devices with increased capabilities and sophistication are introduced to the market. This represents a forecast 29 billion networked devices globally by 2023, up from 18 billion in 2018.¹⁸

IFM expects several key technologies will help drive strong long-term growth in computing power, and data traffic (both consumer and business). These include:

- a continuation of strong growth in internet video services and entertainment
- increasing adoption of the Internet of Things, big data, artificial intelligence and machine learning applications
- the arrival of connected and automated vehicles.

As a result of this growth, IFM expects digital infrastructure across the telecommunication towers, data centres and fibre networks segments will face greater demand and continue to attract interest from infrastructure investors. There are certain opportunities in these asset types that demonstrate core infrastructure characteristics such as essentiality, high barriers to entry, cash-flow stability, and limited technology risk.

In November 2021, for example, IFM announced a long-term partnership with Deutsche Telekom (one of the world's leading integrated communication companies), establishing a new joint venture, which plans to roll out gigabit-capable Fibre-to-the-Home broadband to over four million homes in rural areas of Germany by 2028.

Data centres have also claimed their place within the infrastructure space with many assets demonstrating resilience and the fundamentals to support long-term stable cash flows, driven by growth in the digital economy. While IFM would not view all data centre assets as core infrastructure, there are segments of the market that can demonstrate these characteristics.

Digitalisation of infrastructure

Across our portfolios, IFM is observing how the digitalisation of infrastructure is working to meet changing consumer expectations, as well as create operational benefits across all stages of the asset lifecycle.

Infratech solutions are providing access to real-time information and redefining how consumers interact with infrastructure services.¹⁹ These enable energy and other resources to be optimised, and space better managed. This is especially relevant for airports and train station operators to manage crowds in a COVID-safe economy. They are facilitating smart water management, and the use of sensing technologies that enhance asset operations. And they are underpinning the development of more tailored products and services.

The introduction of automated number plate recognition on the M6 toll road in England is an example of how data collection will drive the creation of more tailored pricing strategies connected to vehicle type, duration of travel and frequency. Similarly, since launching in 2017, Manchester Airport Group's data-driven MAG-O platform has increased business-to-consumer airport revenues through offering services such as car parking, hospitality reservations and retail pre-ordering.

¹⁷ Cisco Annual Internet Report 2017-2022

¹⁸ Cisco Annual Internet Report 2018-2023

¹⁹ www.pwc.com/gx/en/capital-projects-infrastructure/pdf/global-infrastructure-trends.pdf

Increasingly smart mobility platforms are integrating transport modes. Over the coming years, there may be possibilities for the digitalisation of roadside infrastructure to facilitate communication with vehicles, potentially enhancing safety and traffic flow.

With increasing digitalisation, infrastructure sectors will face an evolving set of opportunities and challenges, such as the need for a substantial focus on cyber security. Developing a nuanced understanding of the technology landscape will be essential to acting on emerging trends to minimise risks and unlock value.



M6 toll road, England UK

FLAG 4

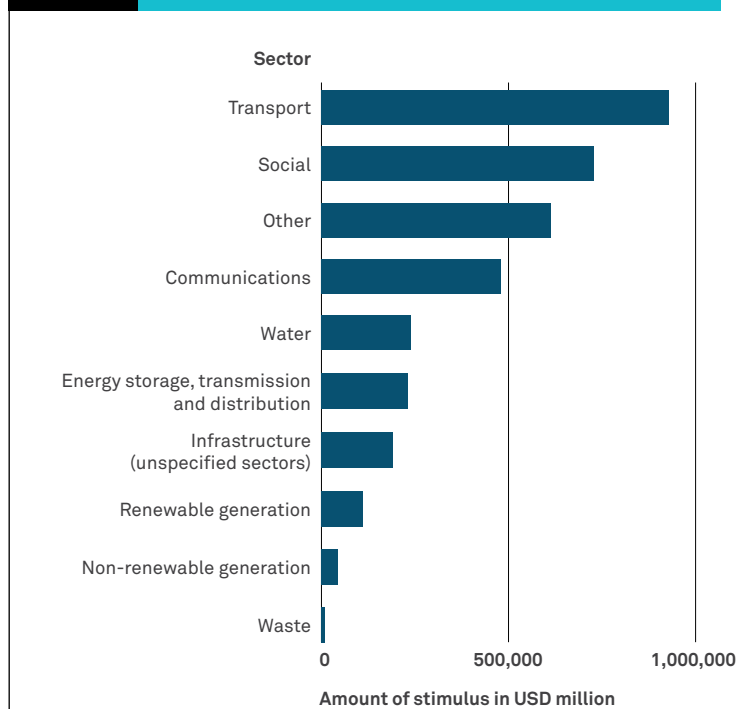
Increasing scope for public private partnerships to build back better

Infrastructure investment is playing a key role in national recovery plans through generating economic and jobs growth, and delivering infrastructure that communities need.

Governments have announced an estimated US\$3.2 trillion allocated to infrastructure globally as part of COVID-related stimulus (see Figure 7),²⁰ and while much of this will be delivered through public grant funding and traditional contracting, we also see significant opportunities for governments to partner with the private sector – particularly long-term, responsible investors like superannuation and pension funds – to deliver infrastructure that is transformational for communities and economies.

The scale of the infrastructure task is substantial, particularly in the United States (US). Private investment in US public infrastructure has lagged behind other countries as infrastructure projects have traditionally been funded with government grants and financed through the issuance of municipal bonds, with little scope for the private sector to invest and partner with governments to deliver public infrastructure more efficiently and at a lower whole-of-life cost. This

FIGURE 07 INFRASTRUCTURE AS A STIMULUS BY SECTOR – G20 SPEND²¹



Source: <https://transformativeinfratracker.gihub.org/overview>

²⁰ Between February 2020 and August 2021. Source: <https://transformativeinfratracker.gihub.org/overview/>

²¹ Other includes: Disaster management infrastructure, Environment and nature based solution, agriculture and commercial and industrial infrastructure. Source: <https://transformativeinfratracker.gihub.org/overview/>

has remained true even as there are record levels of dry powder among equity investors looking to put capital to work in infrastructure.

With President Biden signing the Infrastructure Investment and Jobs Act into law, the federal government has formally recognised and encouraged the role of the private sector in helping governments close the infrastructure investment gap. The Biden Administration plans to spend an incremental US\$284 billion on transportation, including roads, bridges, rail, public transit, airports, ports and electric vehicle infrastructure. Another US\$266 billion is earmarked for enhancing core infrastructure including power grid, broadband, water and environmental resiliency/remediation.²² The private sector will have many opportunities to participate in the buildout of this infrastructure; as well as potentially invest equity (given how substantial the planned incremental spending is) as many state and local infrastructure needs may remain unmet.

In addition, the Act introduces new measures, which encourage states and local governments to consider alternative infrastructure procurement models such as public-private partnerships (PPPs or P3s) when determining

how to finance infrastructure. These measures may work to elevate the profile of PPPs and start the national conversation on alternative infrastructure procurement models, which may include long-term leases of infrastructure or asset recycling opportunities.

The Build Back Better Act could be even more directly consequential in boosting equity investment opportunities through its extension and expansion of tax incentives for investment in renewable energy projects. These incentives enhance project economics and have been essential to the US development of its private-sector renewable energy industry. The inclusion of a direct pay option for monetising the tax incentives would broaden the range of viable industry participants, further spurring investment. However, at the time of this publication, the outcome of the Act is uncertain.

European governments are also turning to the private sector to help deliver their sustainable infrastructure agenda. The European Green Deal – which provides a blueprint for the world's first climate-neutral continent – seeks to mobilise at least €1 trillion in sustainable investments through a mix of public and private sources.²³

On a smaller scale, as Australia looks towards a federal election in 2022, both major parties have policies that seek to catalyse private investment in the post-COVID recovery, clean energy and the commercialisation and development of technologies that are likely to be critical to the net zero transition.

An example of this kind of partnership can be drawn from IFM's experience working with Australian federal and state governments on projects that upgrade and expand the existing transport, defence, education and justice PPP assets it manages. Currently IFM is working with the Federal Government to facilitate a major upgrade of Defence's Joint Headquarters facility. The project will support the doubling of the facility's original capacity and create a 1.9 megawatt solar farm, among a range of other benefits.

More broadly, the Australian Government is planning to invest A\$250 million in its new future fuels policy and hopes to stimulate another A\$250 million in private investment.²⁴ It has also committed to provide the Clean Energy Finance Corporation, Australia's public green bank, with A\$500 million in additional capital for a Low Emissions Technology Commercialisation Fund, which will seek matching investment from the private sector.²⁵

Private capital supporting the electrification of road transport

Ausgrid, energy provider, Australia has partnered with JOLT, an electric vehicle (EV) charging network company, to create an EV charging network across Sydney. Using existing street-side kiosks, which are common in every suburb, the charging stations will be powered by renewable energy.

Indiana Toll Road, North America has deployed Level 3 fast charging infrastructure for EV customers, providing an 80% charge in 30 minutes.

Aleatica, global toll-road company has rolled out EV charging infrastructure and launched a pilot project to test cutting-edge wireless inductive charging for EVs on a one-kilometer section of road, adjacent to Brebemi in Italy. The collaborative project was named by Time Magazine to be among the 100 most important inventions of 2021 for its contribution to sustainable mobility.

²² www.mckinsey.com/industries/public-and-social-sector/our-insights/the-us-infrastructure-investment-and-jobs-act-breaking-it-down

²³ https://ec.europa.eu/commission/presscorner/detail/en/ip_20_17

²⁴ As at 1 March 2022 Source: www.pm.gov.au/media/driving-consumer-choice-uptake-low-emissions-vehicles

²⁵ As at 1 March 2022 Source: www.pm.gov.au/media/billion-dollar-fund-drive-low-emissions-technology-investment

Conclusion

While some of the themes flagged here may be well known to industry watchers, their impact is undeniably shaping the infrastructure landscape. The emerging opportunity sets are thought-provoking (see Figure 8) and will contribute to the resilience of infrastructure assets and services, which communities globally rely on every day; as well as their transition to a net zero economy and an increasingly digital world.

FIGURE 08

Selected examples of potential opportunity areas by report theme

FLAG 1:
Setting and delivering on net zero targets

Real assets or platform companies across:

- Renewable energy
- Low carbon fuels
- Electrification
- Carbon capture /storage

FLAG 2:
Brown-to-green: alternative energy sources

- Renewable energy
- Gas processing (some geographies)
- Carbon storage (some geographies)

FLAG 3:
Fibre, data centres and the digitalisation of infrastructure

Selected opportunities across:

- Data centres
- Telecommunications
- Fibre

FLAG 4:
Increasing scope for public-private partnerships

- US transportation
- US water/wastewater systems
- US broadband
- US, EU and AU green infrastructure

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