2020 First Quarter
Corporate Insights

CREDIT SUISSE

Infrastructure: investing for the future

Introduction

Infrastructure has become top of mind for governments, private investors, and corporates. Why has an issue that has historically been a government concern, almost a background issue, moved to such an important place in the minds and agendas of so many? There are two big reasons.

The first reason is the current state of many conventional infrastructure assets. In many countries, roads, bridges, rails, power grids – infrastructure that was put in place decades ago – has not been funded in a way that has kept pace with usage by growing populations nor with technological advances. So these assets need significant upgrades, modernization, and investment. Furthermore, digitization, urbanization, and other macro changes now mean that the term infrastructure encompasses many more types of assets than we would have considered only a few decades ago, including communication, transportation, and logistics assets. Therefore, a broader range of asset owners are increasingly looking for ways to modernize their asset fleets.

The second, perhaps less obvious, reason that infrastructure has become so topical concerns conventional companies, or non-infrastructure corporates – those who have not typically played in the infrastructure sandbox. They now realize that there is a large and growing pool of private capital, supported by teams of management experts, out there looking for infrastructure-like assets to acquire and consolidate. For non-infrastructure corporates, there is now an ability to hive off non-core pieces of their businesses to new owners, in order to monetize these assets at today's higher valuations. At the same time, it is currently such a seller's market in infrastructure that non-infrastructure corporates need not necessarily give up ownership or control to an infrastructure investor.

In this latest edition of ***Credit Suisse Corporate Insights***, we seek to explain why infrastructure today is not what it used to be, and what that means for companies and investors alike. As the infrastructure asset universe is expanding, the array of opportunities to take action and unlock value is wider than ever.

Beyond bridges and tunnels

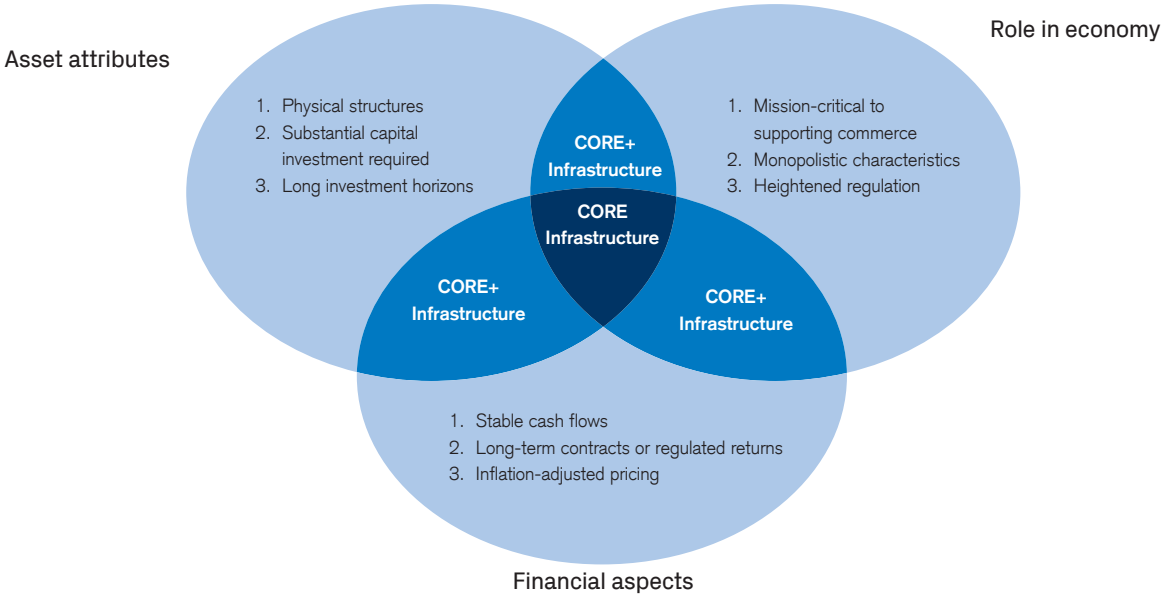
The term “infrastructure” traditionally referred to bridges and tunnels, highways and motorways, power grids, and oil and gas pipelines – assets comprising the backbone of the 20th century economy. But that is changing.

The last quarter century has been witness to trends of accelerating digitization, increased importance of the internet, and massive growth in mobile communication. As such, the term infrastructure now encompasses communication and computing infrastructure such as cell towers and data centers for the vast amounts of information now being created. More recently, global recognition of the challenges presented by climate change – and the realization that private enterprises must take action to ameliorate its effects – has provided an opportunity for ESG investment in the infrastructure space.

We can’t expect technological change to slow its pace. Nor can we expect the underlying infrastructure system to remain static. Looking just a bit farther down the road, we can begin to imagine new infrastructure needs around emerging technologies such as autonomous driving, electric vehicles, and drone delivery of goods ranging from medicine and food to gifts and major durable goods.

The continuous evolution of infrastructure makes it difficult to establish a clear definition that captures not only existing, but also future forms of infrastructure. However, infrastructure assets all generally share the following characteristics:

Exhibit 1: Characteristics of infrastructure assets

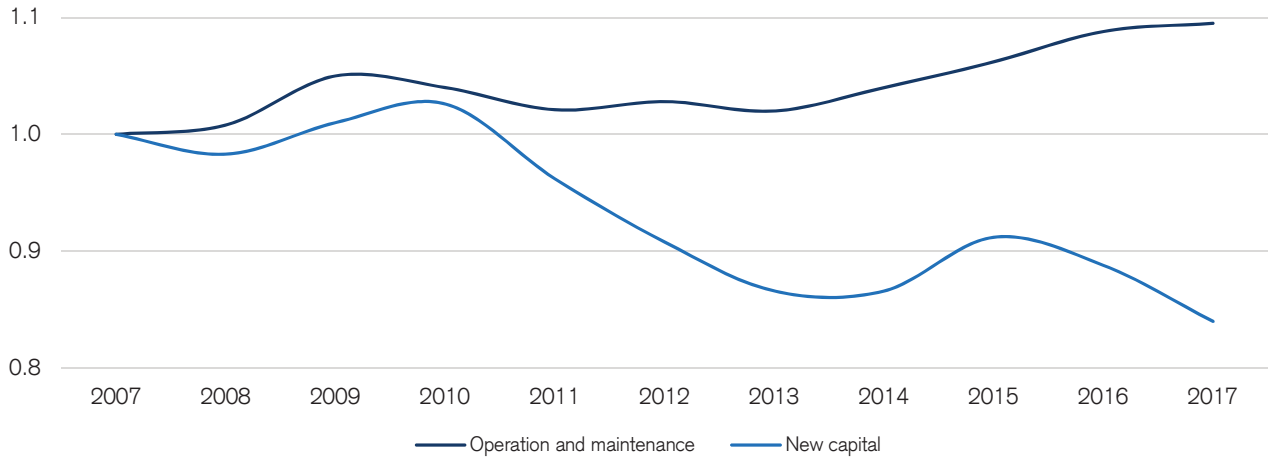


To be classified as "infrastructure", an asset need not be right in the center of the graphic in Exhibit 1, rather it needs to possess many (if not most) of these attributes.

High quality and state-of-the-art infrastructure constitutes a key competitive advantage for businesses in both developed and – increasingly – developing countries. Therefore, it is critical not only to maintain the current state of infrastructure but also to invest in new areas of infrastructure so that existing businesses can increase productivity and new businesses can evolve and thrive.

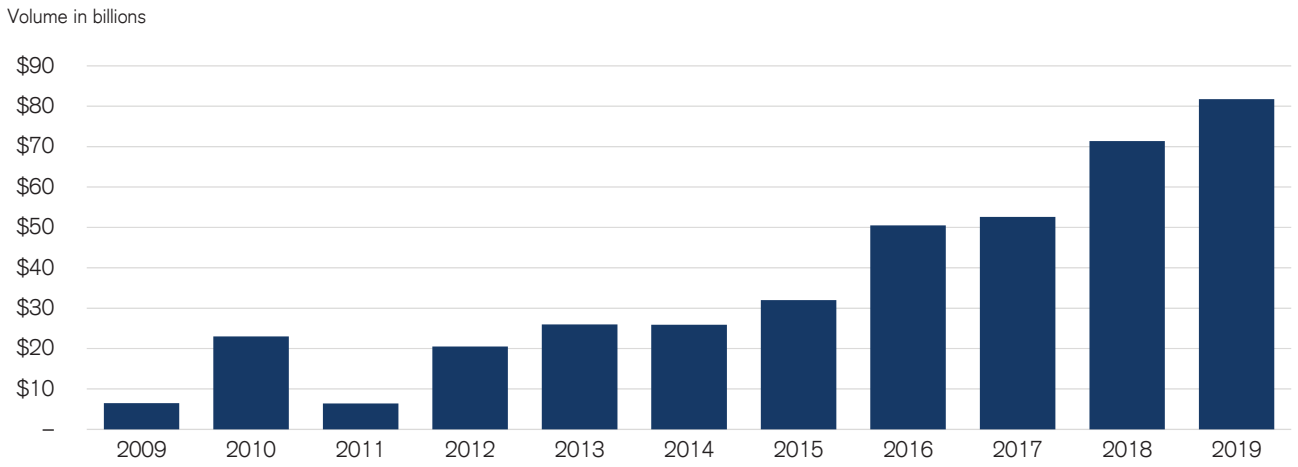
The idea of what constitutes infrastructure is not the only thing that has changed. The source of the funding for many infrastructure projects has been shifting increasingly to the private sector since the 1980s ... and this financing trend is picking up speed. Simultaneously, public infrastructure spending has declined while operations and maintenance spending requirements on infrastructure have increased (Exhibit 2), further emphasizing the need for capital. McKinsey estimates that "the world needs to invest an average of $3.7 trillion [in infrastructure]… every year through 2035 in order to keep pace with projected GDP growth".[1]

Exhibit 2: Indexed change in United States public infrastructure spending[2]



The growing need for infrastructure maintenance and replacement – coupled with the widening funding gap – have provided private capital with unique opportunities with attractive risk-adjusted returns. As a result, we have seen continuous year-over-year increases in infrastructure and renewable energy fundraising since 2014, with 2019 being a record breaking year in which ~$82 billion of total capital was raised.[3]

Exhibit 3: Annual infrastructure fundaising[4]



Moreover, the need for investment in infrastructure could not come at a better time in terms of borrowing costs. As shown below, U.S. and European long-term treasury yields and corporate debt yields are at historical lows, making the cost of debt historically cheap for infrastructure investors.

But this trend has another important consequence for the infrastructure sector: as bond returns fall ever lower, more investors turn to the stable cash flows offered by infrastructure equity investments to supplement portfolio returns.

Exhibit 4: U.S. & Europe treasury yields over time[5]

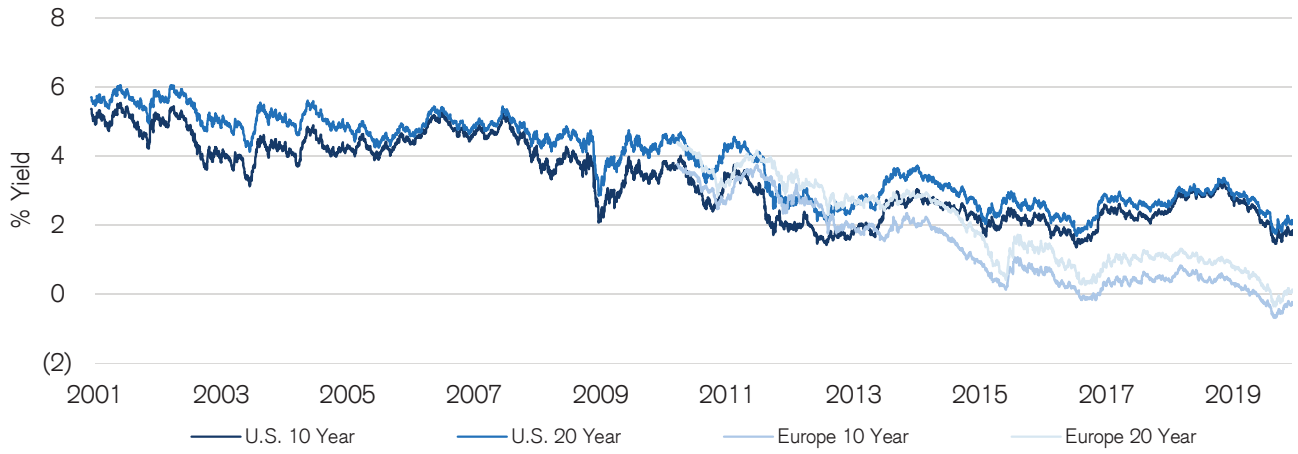
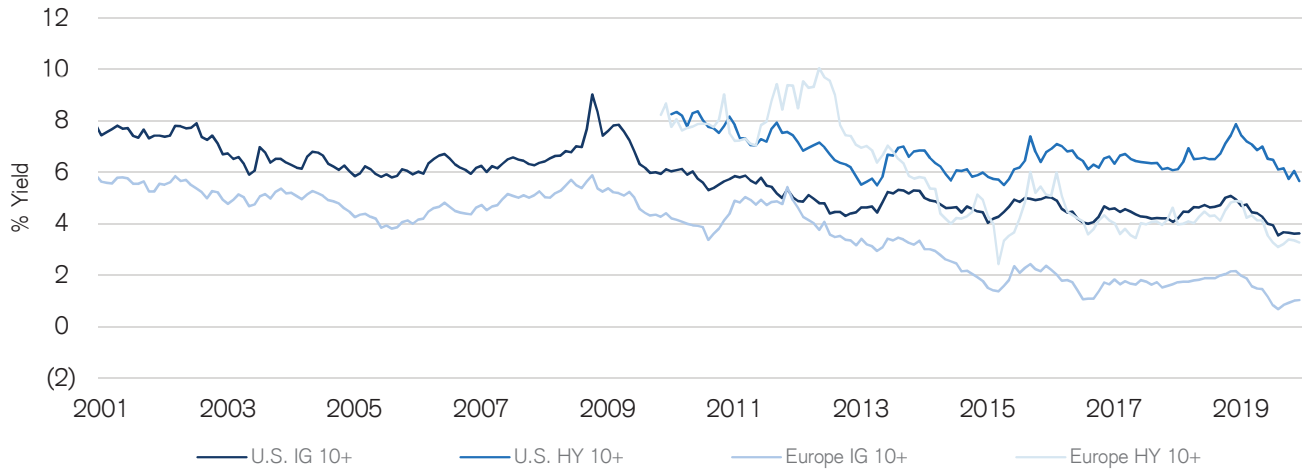


Exhibit 5: U.S. & Europe corporate debt yields[6]



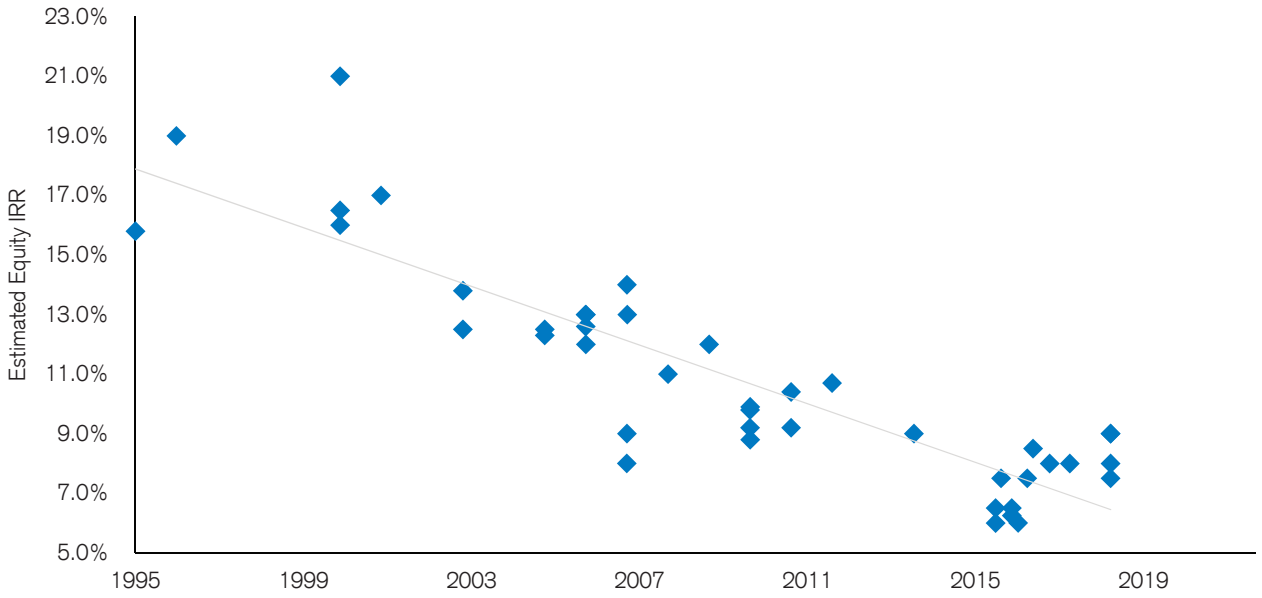
There is a broad spectrum of investments available to support infrastructure funding, ranging from pure debt to various kinds of equity investments and from investments in existing core infrastructure assets to investments in new developments. Consequently, expected returns span mid-single digits to low-double digits[7], which – risk adjusted – can be attractive relative to other opportunities.

Core Infrastructure Assets: risk-adjusted returns have tightened

Investors in infrastructure worry that the significant capital inflows into the sector in recent years are putting pressure on equity returns. In a survey last year, 74% of infrastructure investors had concerns that too much money was entering the infrastructure market, with 55% of respondents believing that we were near or at the top of the market cycle for investing in infrastructure assets.[8]

Let's look at airports, by way of example. There was a gradual increase in European airport valuation multiples from 2010 to 2018, and low negative correlation between passenger numbers and valuation multiples.[9] If an increase in passenger numbers is not driving valuations, and the fundamental characteristics of airports have not changed, then the rise in valuations suggests that investors have lowered their return expectations over time. Airport transactions' equity returns for example, have fallen from the high single to low double digit range in 2007 to mid to high single digits over the last five years. Falling returns are not limited to the airport space; we have seen similar trends in other spaces as well. This trend can be seen in Exhibit 6, which includes selected transactions from the airport space and from the broader infrastructure space.

Exhibit 6: Historical infrastructure equity returns trend[10]



The scarcity of core infrastructure assets coming to market is exacerbating concerns about falling returns. Perry Noble from Hermes Infrastructure commented that the "lack of opportunities is accentuated by the rarity of high quality assets coming to the market".[11] As a result, broad auction processes for core infrastructure assets can be hotly contested, with strong competition from the financial sponsor community keen to use financial engineering and leverage to gain an edge.

As a consequence, investors are increasingly turning to new sectors and sub-sectors with infrastructure-like characteristics in order to meet their return requirements, which has led to the rise of the **"core plus" infrastructure** category. Data centers, fiber optic cables, cell towers, midstream gathering and processing (G&P), short-line rail, and cold storage warehousing – all critical infrastructure to support today's economy – are increasingly sought-after by infrastructure investors looking to cast a wider net. Furthermore, the increased competition for core infrastructure in OECD countries has now led to a rise of investor interest farther afield geographically, including more emerging markets.

Core Plus: Expanding the definition of infrastructure

Core plus infrastructure embodies most but not all of the core infrastructure characteristics noted in Exhibit 7, and it tends to have a more aggressive risk profile justifying higher returns compared to core infrastructure.[12]

Let's look at some examples of these core plus infrastructure sectors.

Exhibit 7: Infrastructure characteristics checklist

	Asset attributes			Role in economy			Financial aspects		
	Physical assets	Substantial capital investment required	Long investment horizons	Mission-critical to supporting commerce	Monopolistic characteristics	Heightened regulation	Stable / predictable cash flows	Long-term contracts or regulated returns	Inflated-adjusted pricing
Data centers	●	●	●	●	○	○	●	●	○
Fiber optic cables	●	●	●	●	●	○	●	●	●
Midstream G&P	●	●	●	●	◐	●	◐	◐	◐
Short-line rail	●	●	●	●	●	○	◐	◐	○
Cold storage warehousing	●	●	○	●	○	○	◐	◐	○
Solid waste landfill	●	●	●	●	●	●	●	◐	●

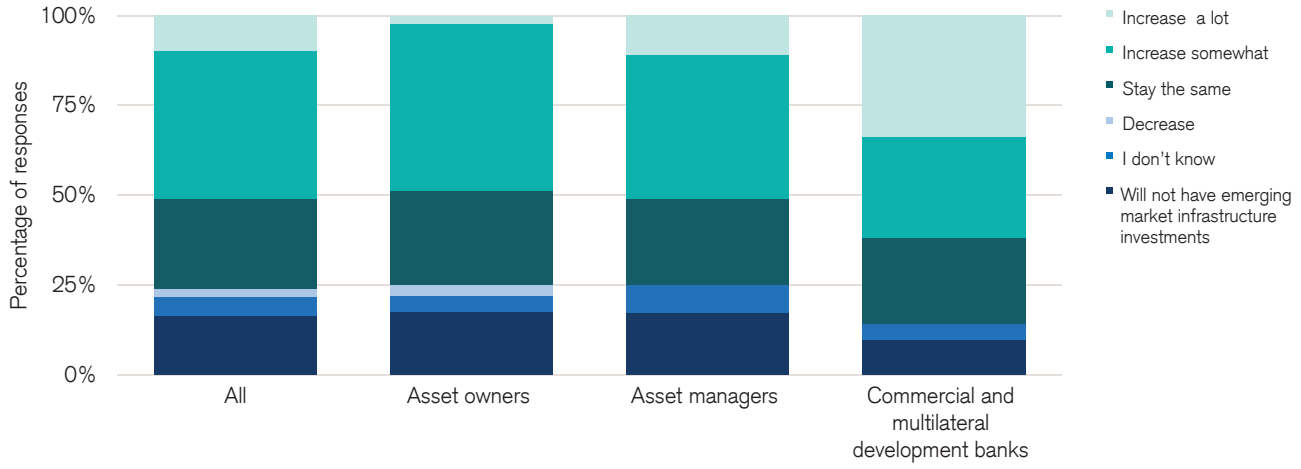
Legend ● Usually present ◐ Varies ○ Usually absent

- **Data centers** consist of a large group of networked computer servers collecting, storing, processing, distributing, or allowing access to large amounts of data. Traditional core infrastructure investors are starting to see the infrastructure-like characteristics in data centers, such as the long useful life of the assets, physical real estate requirements, and long-term contracts with credible counterparties. Where data centers might fall short of core infrastructure is in the lack of monopolistic characteristics and unregulated nature of the assets.
- **Fiber optic cables** are a key piece of hardware in the data ecosystem. Fiber optic cables are used to transmit information over long distances. In areas where fiber optic cables have been investable for a long period of time, the argument can be made that the categorization of the asset is evolving from core plus to core infrastructure. Due to the mission-critical nature of high-bandwidth connectivity and their long term inflation-linked contracts, infrastructure investors are deploying capital in the space.
- **Midstream gathering and processing (G&P)** infrastructure is a critical aspect of the Oil and Gas supply chain. G&P infrastructure includes regional pipeline networks that connect remote well sites to nearby processing plants which help prepare the natural gas and natural gas liquids for transportation to major demand centers. Historically, G&P infrastructure was only constructed once a counterparty signed up for a long-term contract, and/or with minimum volume commitments to reduce volumetric risk. However, more recently, pipeline companies have taken a "build it and they will come" approach with less robust contract structures. G&P assets fit into the "core plus" category due to the riskier nature of the contracts. They also have relatively lower barriers to entry, as they tend to reside within a single jurisdiction with fewer stakeholders to appease.
- **Short-line rail** transports goods over short distances, either through connecting isolated locations to the major rail networks or by connecting two different locations over a short distance. Revenue from short-line rail is generated from short-term or long-term contracts. The tangible nature of these assets as well as the essential service short-line rail provides results in these assets being relatively defensive in nature. However, short-line rail routes generally lack the counterparty and product diversity in traditional long haul rail routes.
- **Cold storage warehousing** provides refrigerated warehousing and storage facility services such as blast freezing, tempering, and modified atmosphere storage. Historically, contracts were structured based on an on-demand model. However, as contract structures now migrate towards a fixed storage commitment model, investors increasingly view cold storage warehousing as core plus infrastructure. The physical nature of the assets, significant upfront capital requirements and scarcity of prime locations in close proximity to customers are all attributes viewed as infrastructure-like. The industry is also considered to be defensive due to the inelastic nature of food demand.
- **Solid waste landfills** are sites for the disposal of discarded materials including solid, liquid, or semi-solid waste resulting from industrial, commercial, or community activities. Solid waste landfills in densely populated areas are often thought of as recession-proof infrastructure assets due to global population growth trends and the critical nature of safe waste disposal as a means to maintaining a healthy living environment. Furthermore, solid waste landfills share many of the same characteristics as core infrastructure assets: contracted with municipalities often with CPI escalators built in, stringent federal and state regulation, 30-40+ year useful life, and necessary infrastructure in today's society. The primary exception being demand risk, which stems from waste correlated to volatile construction cycles. However, as of late, recycling-based sustainability initiatives have provided a new source of demand for landfills.

Going Global

Investors are not only broadening the types of assets they are targeting, but also their geographical target area for such assets. Investors are targeting emerging markets as traditional markets become more saturated with capital. As seen in exhibit 8, over 50% of investors surveyed believe their exposure to emerging markets will increase in the next 3-5 years.

Exhibit 8: Exposure to emerging markets in the next 3-5 years[13]



Emerging markets like Brazil and India offer infrastructure investors an opportunity set with less competition than traditional infrastructure investment regions. They also come with higher return expectations as investors are more inclined to price in an "uncertainty buffer" in these regions to account for their higher perceived risks relative to OECD countries.

Brazil and India have experienced both increased demand for – and investor interest in – infrastructure investment opportunities, as a result of both countries' significant market size and strong growth prospects. India alone must spend about $4.5 trillion on infrastructure by 2030 to sustain its current growth rate.[14] This massive need for capital has led the government of India to introduce the National Infrastructure Pipeline (NIP). To support the NIP, the government of India is contemplating the adoption of international contract standards (such as FIDIC standards) by all of its infrastructure departments, increased asset monetization by asset-owning ministries, as well as relaxing leverage limits for infrastructure investment trusts.[15]

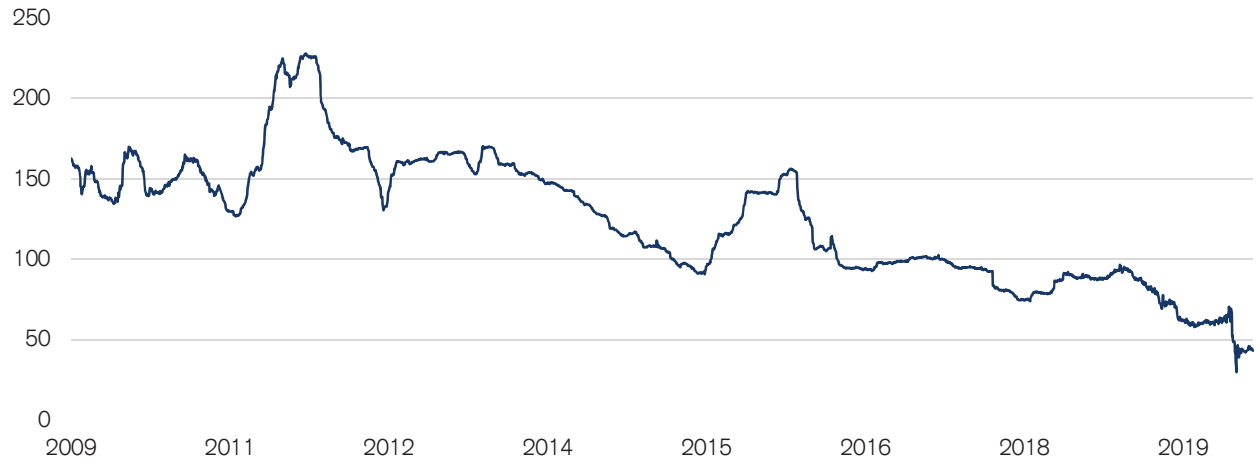
Brazil's government plans to double the country's installed wind capacity to 29 GW by 2026 through a competitive auctioning system have drawn significant international investor interest.[16] India's government has also set an ambitious plan for renewable energy growth, with a goal of reaching 175 GW of installed green energy capacity by March 2022, of which 100 GW is expected to come from solar.[17]

Going Green

The elephant in every boardroom today is the response to climate change and our collective need to accelerate the sustainable energy transition required under the Paris Agreement and the 2°C degree scenario.[18] The Intergovernmental Panel on Climate Change (IPCC) estimates that annual investments in clean energy and energy efficiency would need to increase six times by 2050 compared to 2015, with annual investments of $2.4 trillion needed until 2035.[19] Even the largest asset managers have begun to take action. As BlackRock's Larry Fink mentioned in his January 2020 letter to CEOs, "Our investment conviction is that sustainability… can provide better risk-adjusted returns to investors. And with the impact of sustainability on investment returns increasing, we believe that sustainable investing is the strongest foundation for client portfolios going forward".[20]

The **sustainable energy transition** is already well underway. In the U.S., 300 coal plants have been closed since 2010, representing 40% of the total coal capacity, and 13 states have set 100% renewable energy and zero carbon goals.[21] In Europe, 45% of the EU's 154GW of coal capacity is scheduled to be shut down by 2030 and 13 EU member states are committed to completely phasing out coal.[22] The European power companies Drax and Ørsted provide useful examples of companies in "dirty" power production taking a leading role in the energy transition. While Drax is converting its coal-fired power station to biomass, Ørsted has successfully transformed from an oil, gas, and coal utility to one of the world's leading offshore wind developers. As a result, Ørsted's credit spread has fallen from 150bp to 50bp over the last 10 years. Although some of this may be due to market conditions and shorter maturity tenors, this suggests Ørsted has been rewarded for its transformation.

Exhibit 9: Ørsted's cost of financing (credit spread)[23]

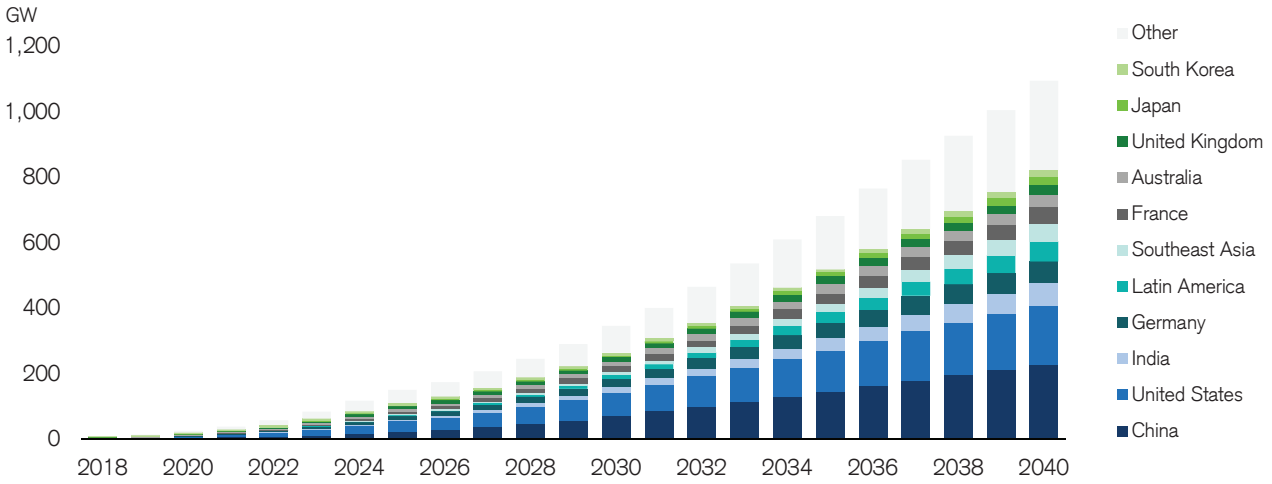


Oil and gas companies are also increasingly focused on energy transformation plans and emission targets. For example, Total is targeting 25GW of renewable energy by 2025, and by Q3 2018 had spent 4.3% of its total capital expenditures since 2010 on low carbon energy projects. For comparison, the world's top 24 publically-listed oil and gas companies only spent 1.3% of their total capital expenditures of $260 billion on low carbon energy in 2018.[24]

Beyond renewables, we are seeing a number of interesting "green infrastructure" trends emerge:

- **Energy storage** is the "killer app" of green infrastructure, since renewable assets produce only intermittent power which is significantly more useful if it can be stored until needed. With de-centralization of the energy system, investments into other areas such as distributed energy and grid flexibility solutions become critical. WoodMac estimates that global investments of $374 billion per year will be required to upgrade the grid for distributed assets.[25] Bloomberg New Energy Finance (BNEF) estimates that the global energy storage market alone will grow to a cumulative 942GW (or $620 billion) market by 2040.

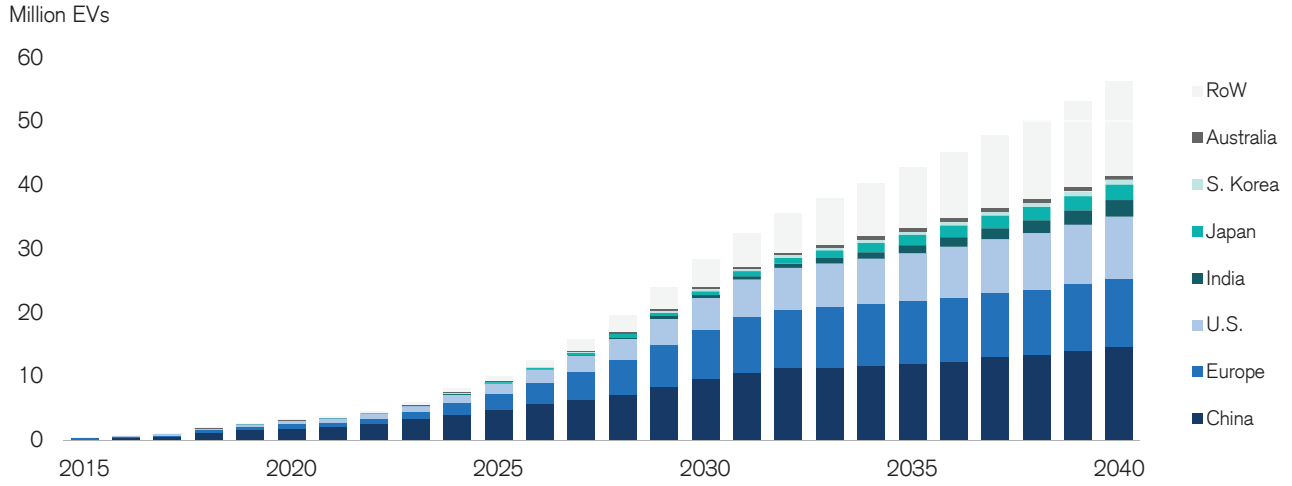
Exhibit 10: Global Cumulative Energy Storage Installations[26]
Global cumulative energy storage installations



The levelized cost of energy (LCOE)[27] for lithium-ion batteries has fallen by 74% since 2012, to $187/MWh in 2018.[28] Still, it is difficult for battery storage to compete with a combined-cycle natural gas-peaker and attract traditional infrastructure investors as it lacks historic deployment data, has a shorter lifespan than solar and wind assets, and it lacks scale. However, when combined with renewable assets, energy storage presents an intriguing investment proposition.

- The **transportation sector** is the largest contributor of any sector of greenhouse gas (GHG) emissions (producing 29% of all emissions).[29] However, the sector is undergoing rapid transformation and convergence with the energy sector. "Electrification" of transportation will change the way we think about transportation infrastructure. Rising fuel prices and efficiency standards, growth in electric vehicle (EV) sales, the uptake in consumer demand for alternative transport modes and ride-sharing, and the development of autonomous vehicles (AVs) and fleets will all require massive infrastructure investment and new smart city solutions. BNEF estimates that by 2035, global annual passenger sales of EVs will hit 43 million units.[30] The EV charging infrastructure market is expected to grow to a $46 billion market by 2025.[31]

Exhibit 11: Annual global EV sales[32]



- **Smart city infrastructure solutions** and assets that perform a common good are evolving. In addition to EV charging networks and vehicle-to-grid solutions, there are opportunities for private-public partnerships and direct investments into green infrastructure that seek to modernize existing infrastructure (roads and systems for AVs) and to re-purpose redundant older infrastructure assets such as parking lots.[33]
- There is also a need to make infrastructure **building materials** cleaner and more sustainable, as well as production processes more energy efficient. For example, the production of 4 billion tons of cement each year is responsible for 8% of global GHG emissions. To align the cement sector with the Paris Agreement, annual emissions need to fall by 16%, which will be challenging in an environment of rapid urbanization and economic development in particular in emerging markets. $60 trillion is expected to be invested in infrastructure in developing countries by 2030.[34] This presents an opportunity for companies and investors to invest in low carbon materials and deploy more efficient technologies and processes.

How to Take Action

All of these trends, themes and ideas present opportunities for our clients, but how you respond will depend on the type of company you run…

Infrastructure corporates

As the infrastructure sector experiences competitive tension with continued capital inflows, infrastructure corporates are contemplating several strategic questions:

- Does our current asset mix allow us to achieve our long-term growth targets?
- Are there opportunities in other infrastructure sub-sectors that complement our existing assets or institutional knowledge?
- Does our asset mix need to evolve to reflect new ESG and climate change-related realities?
- How will the market respond if we step out from our core infrastructure competency?

The current dynamic in the infrastructure sector presents infrastructure corporates with an opportunity to broaden their reach into new infrastructure sub-sectors through portfolio rebalancing and synergistic exploration – without sacrificing long-term sustainable growth targets. Infrastructure corporates can take action by recycling capital through asset sales or minority stake sales in infrastructure assets that are currently commanding premium multiples and rotating into sub-sectors that meet their desired strategic objectives. These objectives could include diversifying their asset base to protect against downside risk or targeting sub-sectors with strong growth prospects. Below are select examples of how specific sectors can seek opportunity in the current environment.

- **Gas utilities adding midstream assets** – secure higher growth assets, realize industrial synergies, and secure access to gas supply
- **Electric utilities seeking fiber or cell towers** – replicate electric grid assets in the communications sector, provide companies with a hedge against evolving electricity needs, introduce high growth assets, and leverage physical rights of way that are already permitted and maintained
- **Oil and gas companies acquiring renewable energy assets** – mitigate climate risk exposure, geological risk, and demand risk
- **Pipeline companies acquiring rail assets** – diversify long-haul liquids transportation business into another form of transportation, realize potential synergies from extending shipping channels available to customers, and provide a hedge against ESG concerns
- **Utilities investing in energy storage** (paired with solar and wind assets) or EV charging infrastructure networks – help in positioning utilities as city infrastructure evolves, hedge against future gas or electricity demand contractions, and leverage regulatory relationships and access to capital to pursue smart city infrastructure
- **Midstream storage companies acquiring data centers** – replicate fuel storage model in the digital economy, leverage industrial expertise in storage, and hedge against possible fossil fuel demand contraction
- **Water utility companies acquiring oil & gas water handling assets** – leverage water handling expertise, utilize high multiple for acquisition currency, and target higher growth infrastructure niches

Non-infrastructure corporates

Non-infrastructure corporates may possess their own infrastructure-like assets which may be ripe for monetization. Characteristics such as stable cash flows and long-term contracts make an increasing array of assets attractive for infrastructure investors – regardless of whether or not such assets meet the traditional definition of infrastructure (see Exhibit 1). This opens up opportunities for corporates to monetize infrastructure-like assets in today's attractive market, bringing numerous advantages, such as:

- Valuation levels for infrastructure assets are currently reaching all-time highs, and the capital available for infrastructure investments is projected to continue to increase – with limited availability of assets.
- Most infrastructure investors have long holding periods when compared to traditional private equity investors, which can lead to long-term stability for the seller.
- By freeing up capital tied up in infrastructure assets, corporates can avoid substantial maintenance capital expenditures, lower their cost of capital, and re-invest more in their core business.
- Corporates can choose between selling a minority stake or fully divesting assets. By retaining a majority stake, corporates can retain control of the most critical assets, operate them as needed, continue to consolidate the assets for accounting purposes, and potentially receive a multiple re-rating on the corporate's remaining stake in the infrastructure asset. On the other hand, divestment in full maximizes cash proceeds and eliminates the need to manage and sustain the asset.
- Partnering with experienced infrastructure investors might unlock even further long-term value creation potential, resulting from the implementation of best practices and improvements in efficiency.

In practice, there are many examples of corporates harvesting their infrastructure assets. For example, European communication companies are contemplating divesting their physical assets (e.g. network assets, cable assets and residential telecommunications assets) and operating exclusively as service companies.

The opportunity to unlock value by divesting infrastructure assets is not limited to a small set of companies across few sectors. In fact, corporates across a wide variety of sectors own assets that can be attractive to infrastructure investors. Potential transactions could include:

- Mining companies monetizing short-line rail assets, ports, or other owned transportation infrastructure assets
- Industrial or resource extraction companies monetizing behind-the-fence power generation facilities
- Technology companies often develop cloud solutions that can be widely applicable outside of the companies themselves
- Logistics companies monetizing physical transportation assets such as ships and planes to pursue an asset-light model
- Data-heavy corporations monetizing data centers or other telecommunications equipment

In most cases, assets can be structured to appeal to infrastructure investors – even assets that generally do not possess any infrastructure-like characteristics. Certain key infrastructure-like benefits for investors can be replicated through long-term contracts and inflation-adjusted pricing, which assures stable cash flows. As a result, corporates can demand higher prices for their assets and thereby unlock significant value potential. However, corporates should be mindful that setting up such contract structures could result in an increase in future expenses, or could be viewed as a liability from an accounting and ratings perspective.

Conclusion

As our increasingly global and interconnected economy has evolved, so too has the infrastructure universe. Data transmission and storage, power generation and storage, and logistics all remain vital to every company. “Infrastructure” now comprises a broader range of assets which touch more companies, in more industries and in deeper ways than before. Both emerging (and not-yet-invented) technologies and the need to invest in a greener economy will continue to exert pressure on the performance and success of our clients.

So what does this all mean? What are the implications for today’s corporate decision makers?

Won’t infrastructure always just be there for me? Isn’t it the responsibility of the government? Historically, yes, since governments had the mandate and the money to install bridges and roads. But growing economies, populations and business needs have outstripped most governments’ ability to pay … and certainly the demand for many newer infrastructure assets is moving at a faster clip than governments typically do. So there is a growing need for alternative investing strategies to maintain the infrastructure. And there are correspondingly growing opportunities for infrastructure players and non-infrastructure corporates to take advantage of this trend.

For infrastructure players, it is the opportunity to take stakes in newer – but adjacent – infrastructure opportunities in new markets, with new technologies, at better rates of return. In a world of falling returns – those infrastructure investors are looking more broadly at opportunities away from the core.

And for companies that have not typically been associated with infrastructure, it is the opportunity to monetize parts of their businesses which may attract a new kind of buyer. Any parts of your business that satisfy these criteria are those with which to consider partnering with an infrastructure investor. Either way, the infrastructure horizon looks bright.

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Endnotes

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