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Global Infrastructure Universe Review

Tracking Investible Private Infrastructure Companies in 25 Key Markets

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Executive Summary

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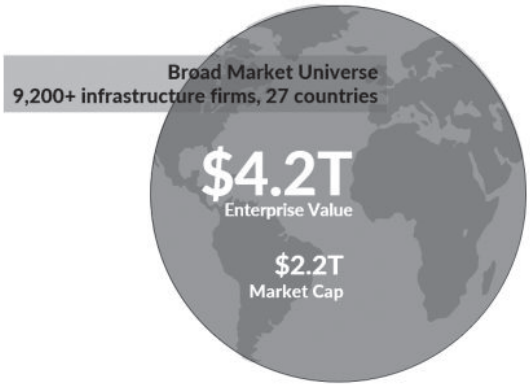
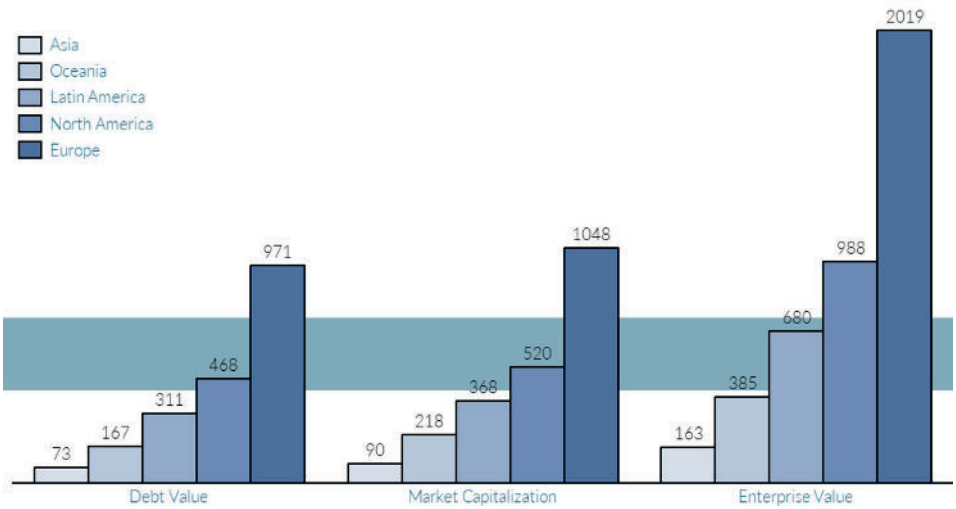
This report aims to equip private infrastructure investors with a framework for analysing and managing investments by leveraging The Infrastructure Company Classification Standard (TICCS®) classification system, which categorises assets by business risk, industrial activity, geo-economic exposure, and corporate structure. By providing detailed insights into market size, trends, and revenue growth across 25 key markets, the report enables investors to identify opportunities, benchmark performance, and make informed decisions.



The infraMetrics Broad Market Universe provides a comprehensive view of the global unlisted infrastructure sector. The universe categorises each firm's business model, corporate structure, and asset type according to the TICCS® framework. This classification system maps assets to the 4 dimensions of TICCS® framework across 3 class and 5 sub-classes of business risk, including 8 industrial superclasses, corresponding to 35 industry classes of specific industrial activities and 101 industrial asset-level subclasses, 4 geoeconomic classifications and 2 corporate structure classes. This aids pension funds, insurers, institutional investors, and asset managers in organising their infrastructure investments and understanding their exposure to specific segments within the sector. These segments are aligned with sub-indices, enabling tailored benchmarking against similar portfolio compositions.

FIGURE 1: ENTERPRISE VALUE, MARKET CAPITALISATION, DEBT VALUE BY REGIONS (USD IN BILLION), AS OF 2022



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In this asset universe, Europe leads the unlisted infrastructure market, accounting for nearly half of the global enterprise value. This prominence reflects extensive investment in infrastructure projects and the strong presence of large-scale, unlisted infrastructure companies across the region.

In 2022, the Renewable Power sector commanded the highest market capitalisation at 30%, highlighting considerable investment and emphasis on sustainable energy sources. This substantial share aligns with global trends toward renewable energy adoption and supports the ongoing transition to greener energy solutions, driven by climate change imperatives and the demand for sustainable development. Building on the significant role of the Renewable Power sector and its alignment with global sustainability goals, this discussion delves into a deeper analysis of investment strategies and market trends across various infrastructure segments, providing customised insights for investors and asset managers, allowing them to focus on specific segments—such as contracted and merchant infrastructure in the social and transport sectors—creating customised benchmarks that reflect the weighting of these segments within their own portfolios.The structured approach of the dataset supports portfolio diversification across sectors, reducing concentration risk and enhancing overall balance. For asset managers, it reveals substantial opportunities by highlighting regions with high market capitalisation and offering insights for a focused investment strategy. For instance, if ProjectCo entities hold more influence than CorporateCo entities within a sector, investment strategies can be adjusted to suit specific risk profiles.

Countries chosen to be included in the universe must pass the criteria set out to reflect accurate representation of what the private infrastructure markets truly entail. As information and data of private infrastructures are not readily available, we aim to identify and reveal these infrastructure gaps that are not easily captured in the market. Moreover, institutional investors can leverage private infrastructure datasets to stay attuned to emerging trends within the infrastructure sector by utilising the data to make informed, strategic decisions. To name a couple of examples, analysing sector trends and regional insights can help to identify emerging opportunities by uncovering which sectors are attracting the most investments or experiencing rapid growth, or using geographic data to pinpoint regions with rising demand. Also, by monitoring capital flows, investors can understand where funds are channelled to in specific sectors, thereby able to leverage the data to assess financing models.

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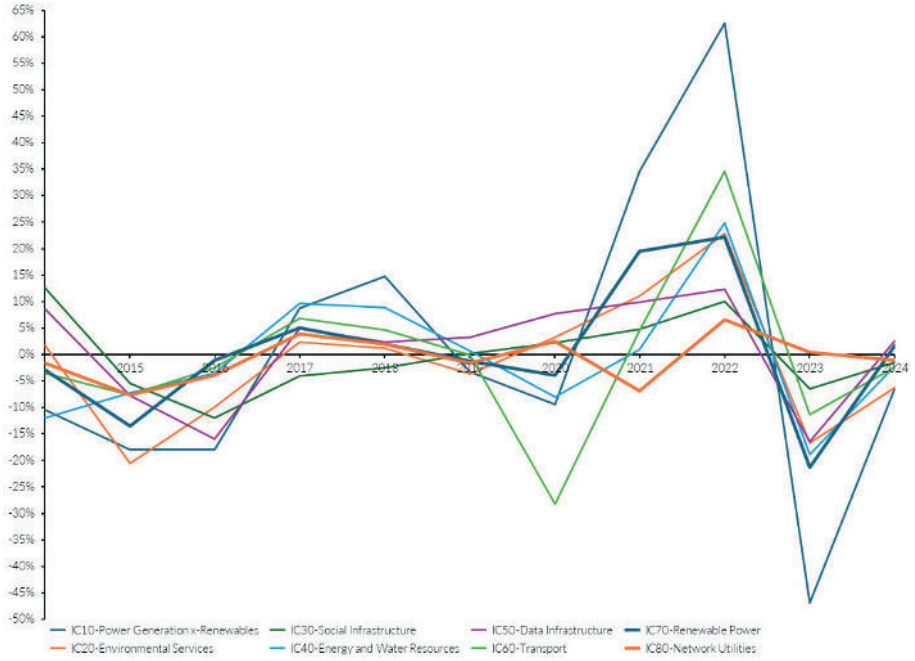
Key Highlights:

1. Market Leadership: Europe leads in market capitalisation, debt value, and enterprise value, reflecting its mature infrastructure market and investor interest, especially in transport, utilities, and renewables.
2. EDHEC Global Asset Distribution: The United States owns the largest share of infrastructure assets, followed by the UK and Brazil, driven by extensive transport, energy, and utility investments.
3. Contracted Business Model Prevalence: Contracted models are prominent, representing 71% of companies, contributed to 54% of total assets value, and 56% of market capitalisation, emphasising a preference for stable, long-term cash flows.
4. Geoeconomic Pillar: 56% of private infrastructure companies operate at the national level, 52% of total assets and 49% of market capitalisation due to its strategic positioning in high-growth markets, robust asset management.
5. Industry trends: The IC70-Renewable Power sector accounts for a larger share amongst the industries, holding 50% of companies, 27% of total assets value, and 30% of market capitalisation, alongside Network Utilities and Transport as leading segments, underscoring the focus on clean energy, essential services, and transport infrastructure.
6. Project Companies Dominance: ProjectCo entities comprise 81% of companies, contributed to 51% of total assets value, and hold 52% of market capitalisation, highlighting the industry's project-centric structure.

FIGURE 2 : REVENUE GROWTH BY INDUSTRIAL CLASSES FROM 2013 TO 2022



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From 2012 to 2022, the YoY revenue growth across sectors reveals how various economic events influenced each industry's performance. IC10 (Power Generation x-Renewables) faced substantial volatility, with declines in 2014-2016 due to shifting policies and market downturns, but rebounded sharply in 2021-2022 amid post-pandemic recovery and energy security concerns. IC20 (Environmental Services) experienced notable drops in 2014 and 2016, tied to changes in environmental policies and global spending cuts, before recovering as sustainability gained prominence. Sectors like IC40 (Energy and Water Resources) and IC60 (Transport) faced disruptions, particularly during the 2020 COVID-19 pandemic, which caused sharp declines due to lockdowns and reduced mobility. However, they quickly rebounded as economies reopened in 2021 and 2022. IC70 (Renewable Power), despite initial slowdowns in the mid-2010s, saw substantial growth in recent years, propelled by global shifts towards clean energy. Notably, IC80 (Network Utilities), a majority regulated sector, showed relative stability between 2014 and 2016 compared to other sectors, with only modest declines. This stability is largely due to the regulated business model that provides consistent revenues, regardless of broader market volatility or commodity price changes, as utilities often have set tariffs and demand remains inelastic. Even during periods of economic slowdown or market shocks, such as the oil price crash in 2014 and global policy shifts, the essential nature of utility services allowed IC80 to remain least impacted, highlighting the resilience of regulated sectors during turbulent times.

TABLE 1: CORRELATION BETWEEN IC10 TO IC80 , GDP, AND CPI

	GDP	CPI	IC10	IC20	IC30	IC40	IC50	IC60	IC70	IC80
GDP	1									
CPI	0.40	1								
IC10	0.47	0.48	1							
IC20	0.24	0.47	0.90	1						
IC30	0.15	0.36	0.57	0.72	1					
IC40	0.39	0.40	0.89	0.73	0.26	1				
IC50	0.12	0.14	0.75	0.84	0.84	0.54	1			
IC60	0.71	0.67	0.79	0.62	0.34	0.84	0.36	1		
IC70	0.49	0.39	0.95	0.89	0.52	0.81	0.72	0.72	1	
IC80	0.26	0.39	0.35	0.53	0.27	0.52	0.36	0.35	0.25	1

The correlation matrix table above provides valuable insights into the relationships between various economic and revenues. GDP exhibits a positive correlation with all variables except for IC80-Network Utilities, indicating that as GDP increases, most other indicators also tend to rise, except for network utilities. CPI is positively correlated with all variables, with the highest correlation observed with IC60-Transport (0.67), suggesting a close link between changes in consumer prices and transportation infrastructure.

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IC10-Power Generation x-Renewables demonstrates strong positive correlations with IC70-Renewable Power (0.95) and IC20-Environmental Services (0.90), underscoring the interconnectedness of power generation, renewable energy, and environmental services. IC20-Environmental Services also shows strong positive correlations with IC50-Data Infrastructure (0.84), indicating a close relationship between environmental services and data infrastructure.

IC30-Social Infrastructure exhibits moderate positive correlations with IC50-Data Infrastructure (0.84) and IC20-Environmental Services (0.72), suggesting a moderate relationship between social infrastructure and both data infrastructure and environmental services. IC40-Energy and Water Resources exhibits strong positive correlations with IC10-Power Generation x-Renewables (0.89) and IC60-Transport (0.84), indicating a close link between energy and water resources, power generation, and transportation.
IC50-Data Infrastructure shows strong positive correlations with IC20-Environmental Services (0.84) and IC30-Social Infrastructure (0.84).. Whilst IC60-Transport exhibits strong positive correlations both with GDP (0.71) and IC40-Energy and Water Resources (0.84).

IC70-Renewable Power exhibits strong positive correlations with IC10-Power Generation x-Renewables (0.95) and IC20-Environmental Services (0.89Finally, IC80-Network Utilities shows a negative correlation with GDP (-0.26) but positive correlations with other variables, with the highest being with IC20-Environmental Services (0.53).

The negative correlation between IC80-Network Utilities and GDP can be attributed to the tariff structure, where CPI is a factor in calculating tariffs. As GDP increases, the tariff structure based on CPI may not align with the overall economic growth, leading to an inverse relationship between network utilities and GDP.

Market Universe (Unlisted) Introduction

Market Universe (Unlisted) Introduction

The universe (unlisted) is a collection of all privately held infrastructure assets in companies that meet the inclusion criteria (refer to table 8). The objective of the universe is to ensure that the relevant individual markets are well documented (i.e., that investible infrastructure is well identified). Only certain markets are included to ensure that coverage is representative or trend towards the best representativity achievable.

The eligibility for market inclusion (refer to table 8) falls under 3 criteria: size, market activity, and financial information. These thresholds ensure that markets selected are sizable, active, and transparent, which reinforces the objective of the universe for assets to be well identified and documented.

Assets identified are mapped to the TICCS® framework whereby it categorised characteristics of the infrastructures into four pillars: business risk, industrial activity, geo-economic exposure and corporate structure. Each pillar captures a different dimension of what makes infrastructure companies unique and relatively more homogenous.

TICCS® is built based on academic research about the financial economics of infrastructure companies. The range of categories available ensures that private infrastructure companies can be integrated into this framework. While TICCS® aims to categorise companies based on their prima facie characteristics, it focuses on groupings that are relevant to understanding risk and that play a role in asset pricing and portfolio construction.

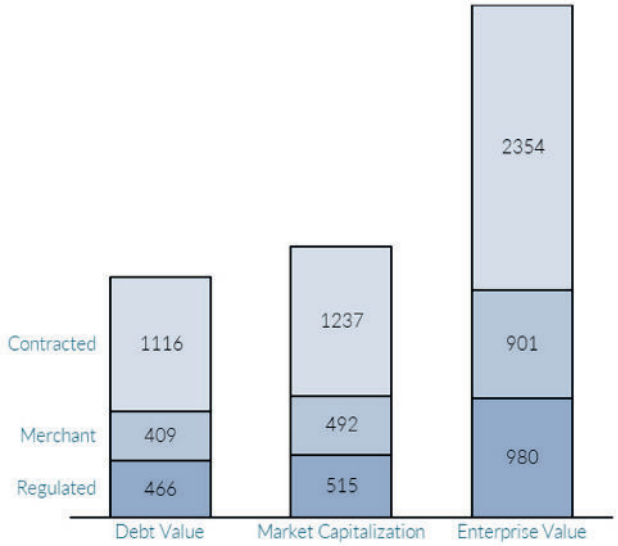
The business-risk classification considers the financial economics of infrastructure companies, in particular the role of contracts and regulation. An industrial classification uses a very granular taxonomy of industrial activities, technologies, and asset-level characteristics that capture the potential diversity of infrastructure companies' services and products. A geoeconomic classification captures the degree of common economic exposure of different infrastructure companies; A corporate structure classification reflects the expected difference of behaviour between single-project and multi-project infrastructure ventures.

Market Size

Market Size

This section provides an in-depth and comprehensive analysis of the market size, enterprise value, market capitalisation, and debt value for the four key pillars. The dataset utilised for this analysis is based on the fiscal year 2022, ensuring that the most recent and relevant data is considered. The methodologies employed in the calculation of these metrics are detailed and documented in the Appendix section.

FIGURE 3: ENTERPRISE VALUE, MARKET CAPITALISATION, DEBT VALUE (USD) BY BUSINESS MODEL, AS OF 2022



The contracted business model accounts for the largest share of Debt Value at USD1,116 billion, Equity Value at USD1,237 billion, and Enterprise Value of USD2,354 billion, among infrastructure assets. This dominance reflects the low-risk profile of assets secured by long-term agreements such as Power Purchase Agreements (PPAs), toll concessions, or other stable revenue contracts. These agreements ensure predictable and often inflation-linked cash flows, making these assets attractive to lenders who value their ability to service debt. Similarly, equity investors appreciate the steady returns and reduced volatility, which align with the needs of long-term capital providers like pension funds and insurers.

The merchant business model represents USD409 billion in Debt Value, USD901 billion in Enterprise Value, with a slightly higher portion of Equity Value, at USD492 billion. Unlike contracted assets, merchant models rely on market-based revenues, such as wholesale energy prices or unregulated tolls, leading to higher cash flow volatility. This increased risk limits their appeal to debt providers, resulting in a smaller debt share. However, equity investors are willing to take on this additional risk, attracted by the potential for higher returns. The slightly elevated Equity Value indicates a risk-return trade-off, where equity capital compensates for the reduced reliance on leverage. Merchant assets are thus positioned as higher-risk, higher-return opportunities in infrastructure portfolios.

Market Size

The regulated business model accounts for USD466 billion in Debt Value, USD515 billion in Equity Value, and USD980 billion in Enterprise Value, reflecting its relatively balanced capital structure, compared to contracted and merchant business models. Assets in this category operate under government oversight, often with guaranteed pricing or capped returns, providing stable and predictable revenue streams. This stability appeals equally to both debt and equity investors, with creditors valuing their low default risk and equity investors appreciating their steady income generation. The even distribution across Debt and Equity Values underscores the low-risk, stable-return nature of regulated assets, making them reliable components in diversified infrastructure portfolios.

The Contracted segment's dominance in the infrastructure sector is attributed to its ability to offer stable and predictable returns, which are highly sought after by investors and lenders. The Regulated and Merchant segments, while significant, present higher risks due to their susceptibility to regulatory changes and market volatility, respectively.

FIGURE 4: ENTERPRISE VALUE, MARKET CAPITALISATION, DEBT VALUE (USD) BY INDUSTRIAL CLASSES, AS OF 2022

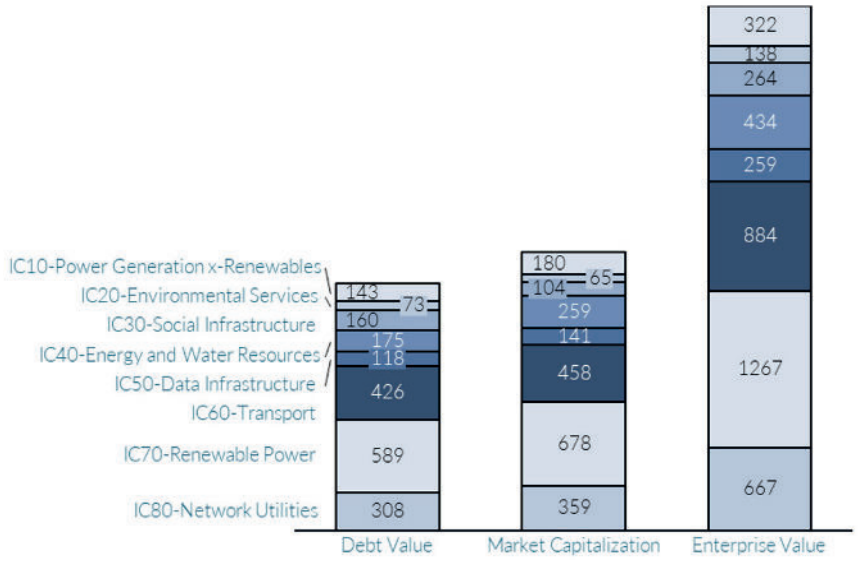


Figure 4 above provides the breakdown of the second pillar – Industrial classes where it presents analysis of debt value, market capitalisation, and enterprise value across various industrial classes within the unlisted infrastructure market as of 2022.

IC70-Renewable Power holds the largest share in debt value, market capitalisation and enterprise value, at USD589 billion, USD678 billion and USD1,267 billion, respectively. This sector's prominence reflects the global shift towards sustainable energy and the stability provided by long-term agreements like PPAs. High debt proportions indicate lender preference in the predictable cash flows and policy incentives associated with renewable projects. Similarly, equity investors value the inflation-linked revenue potential and long-term growth prospects, making this sector a cornerstone of infrastructure portfolios.

Market Size

IC60-Transport is the second-largest segment, comprising of USD426 billion in debt value, USD458 billion in market capitalisation, and USD884 billion in enterprise value. This notable share reflects substantial investments in transportation infrastructure, including roads, railways, airports, and ports. The critical role of transport infrastructure in supporting economic activities and societal functions is evident from this considerable market share.

IC80-Network Utilities, encompassing essential services such as electricity, gas, and water supply networks, account for USD308 billion in debt value, USD359 billion in market capitalisation, and USD884 billion in enterprise value. The slight emphasis on equity reflects the low risk and stable returns that attract conservative, long-term investors. Debt providers also find these assets appealing due to their low default risk and essential-service nature. This highlights the importance of utility services in maintaining societal functions and economic stability. Reliable network utilities are fundamental to both daily life and industrial operations.

IC40-Energy and Water Resources constitute USD175 billion of debt value, USD259 billion of market capitalisation, and USD434 billion of enterprise value. This class includes assets related to traditional energy production and water resources, reflecting ongoing demand for these essential services. Its higher share of market capitalisation relative to debt indicates equity investors' appetite for the sector's growth potential.

IC10-Power Generation x-Renewables represents USD143 billion of debt value, USD180 billion of market capitalisation, and USD322 billion of enterprise value. Traditional power generation assets, such as coal and gas plants, face challenges due to decarbonisation efforts. However, the consistent cash flows from existing infrastructure make them appealing for debt financing, while equity investors focus on their residual value and potential for transition strategies.

IC50-Data Infrastructure holds USD118 billion of debt value, USD141 billion of market capitalisation, and USD259 billion of enterprise value, emphasising the growing importance of technology and digital infrastructure. Investments in data centres, communication towers, and other IT infrastructure are crucial as the digital economy expands and reliance on digital services increases. This emerging sector has high growth potential driven by digitisation and increasing data usage. The balanced share across debt and equity reflects its evolving risk-return profile, with investors recognising both its stability and growth opportunities.

IC30-Social Infrastructure accounts for USD160 billion of debt value, USD104 billion of market capitalisation, and USD264 billion of enterprise value. This class includes investments in public services such as schools and hospitals. These assets often rely on government-backed agreements (i.e. Public-private partnership (PPP)), providing stability to debt investors. However, the lower equity share reflects limited growth prospects and investor focus on steady, bond-like returns.

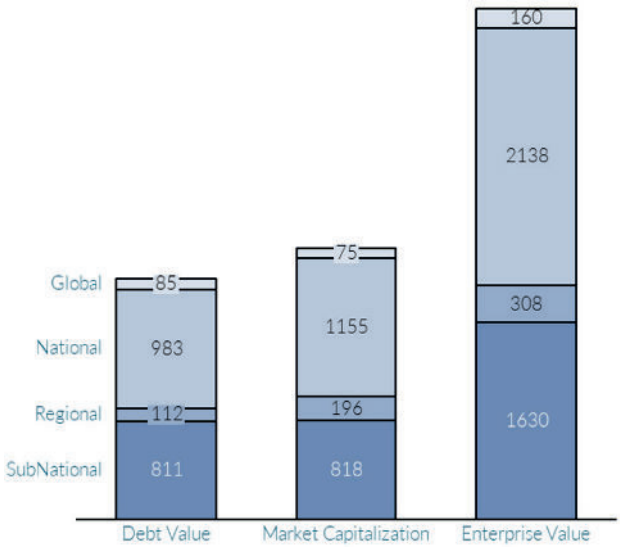
Market Size

IC20-Environmental Services has the smallest portions in debt value, market capitalisation, and enterprise value, at USD73 billion, USD65 billion, and USD138 billion, respectively. This segment includes investments in waste management, recycling facilities, and other environmental protection services. Despite the smaller share, this emerging area has significant growth potential, especially as environmental sustainability becomes increasingly prioritised globally.

The above breakdown of debt value, market capitalisation and enterprise value provide insights into how financial valuation is distributed across different geoeconomic levels. Within the four classifications, national and subnational exposure weighs the most due to various factors as explained below.

Firstly, national and subnational markets represent the largest portion of economic activity, especially in large economies as many companies operate primarily within their home countries, where they have more established networks, market knowledge, and consumer bases. This concentration drives higher valuations in both equity (market capitalisation) and debt financing.

FIGURE 5: ENTERPRISE VALUE, MARKET CAPITALISATION, DEBT VALUE (USD) BY GEOECONOMIC, AS OF 2022



Infrastructure assets such as utilities, transportation networks, and renewable energy facilities are deeply integrated into local economies, supported by region-specific regulatory frameworks, stable demand, and localised expertise. For instance, Southern Water in the UK operates under Ofwat's regulatory oversight, ensuring reliable service for its customer base fixed geographically, while Autostrade per l'Italia supports commerce and tourism by managing Italy's toll roads under government concessions. Similarly, renewable energy projects like the Hornsea One Offshore Wind Farm in the UK benefit from guaranteed revenues through Contracts for Difference (CfD) schemes, ensuring long-term stability. These illustrate how localised operations, backed by regulatory clarity and consistent demand, make infrastructure investments at national and subnational levels attractive and resilient.

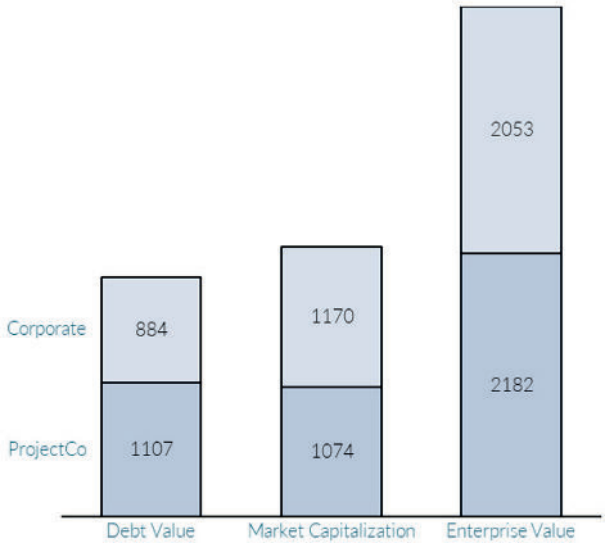
Market Size

Moreover, investors and lenders generally perceive national and subnational companies as less risky compared to regional or global enterprises as nationally and locally focused companies are usually less exposed to cross-border risks, such as currency fluctuations, international regulatory hurdles, and geopolitical uncertainties.

Hence, these factors combined drives equity and debt value primarily in national and subnational levels as compared to regional and global areas.

ProjectCo structures hold a higher debt value at USD1,107 billion, compared to Corporate at USD884 billion, indicating that ProjectCo rely more on debt financing for their projects. These entities are typically debt-heavy, leveraging structured financing backed by predictable, project-specific cash flows, such as tolls or government-backed concessions. Additionally, substantial upfront capital is required for infrastructure projects, which is typically financed through debt. In terms of market capitalisation, Corporate structures have a slight edge at USD1,170 billion versus ProjectCo USD1,074 billion. This is attributed to the diversified nature of Corporates, which might include multiple projects and revenue streams, offering more stability and attractiveness to investors.

FIGURE 6: ENTERPRISE VALUE, MARKET CAPITALISATION, DEBT VALUE (USD) BY CORPORATE STRUCTURE, AS OF 2022



Market Size

FIGURE 7: MEAN VALUATION(EV) PERCENTAGE CHANGE FROM 2008 TO 2023

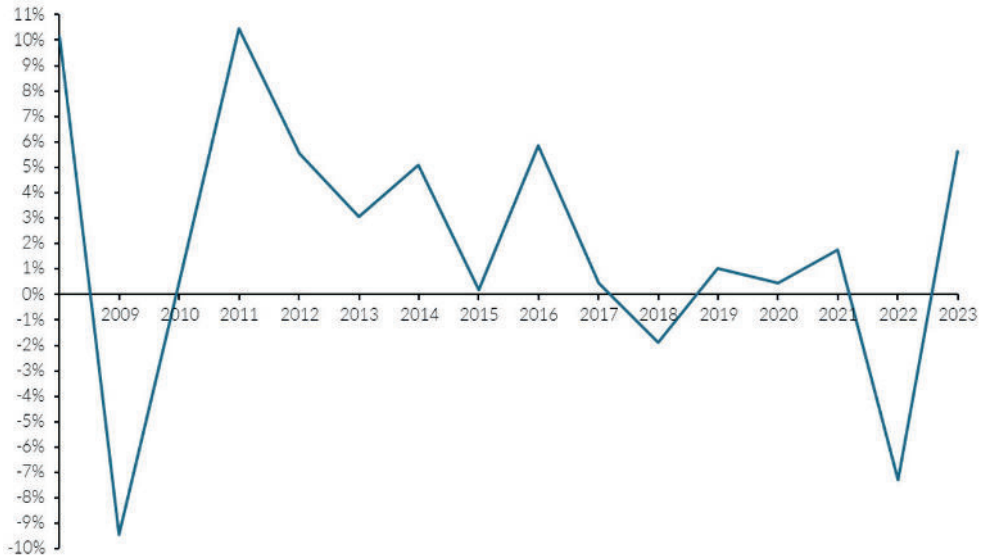
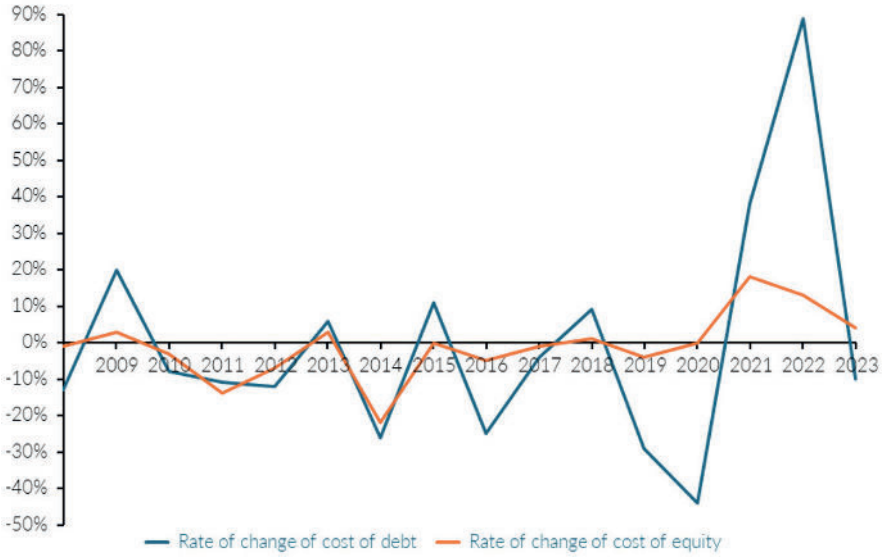


FIGURE 8: MEAN RATE OF CHANGE OF COST OF DEBT AND COST OF EQUITY FROM 2008 TO 2023



From an economic perspective, infrastructure assets are not immune to market shocks such as financial crises, recessions, and policy changes, all of which can lead to declines in asset values.

2008-2010: The sharp decline in EV growth aligns with the 2008 Global Financial Crisis, which negatively affected asset valuations. This impact was particularly evident in transport sectors, such as ports that depend on trade activities. For instance, Peel Ports saw a 6.2% decrease in tonnage throughput, dropping to 60.1 million. During this period, the rate of change of cost of debt spiked due to tightened credit conditions and increased risk premiums, making borrowing

Market Size

more expensive and reducing the EV. Although the rate of change of cost of equity also rose slightly, the debt cost impact was more pronounced. Once the global economy began to recover, starting in 2010, sectors such as utilities, driven by increased demand returned to growth. Resulting in positive growth in the EV.

2011-2013: the European Sovereign Debt Crisis introduced significant economic uncertainty, especially in countries like Spain and Italy. However, infrastructure assets proved relatively resilient, The rate of change of cost of debt and equity remained relatively stable. Consequently, the decline in EV growth during this period was more attributable to market caution and reduced investor confidence rather than an actual increase in capital costs. Additionally, significant cash outflows in the form of dividend payments, such as APRR's €1.2 billion in 2012 and Heathrow Airport's £1 billion in 2013, likely contributed to lower EV by reducing retained capital for reinvestment during a period of heightened economic uncertainty.

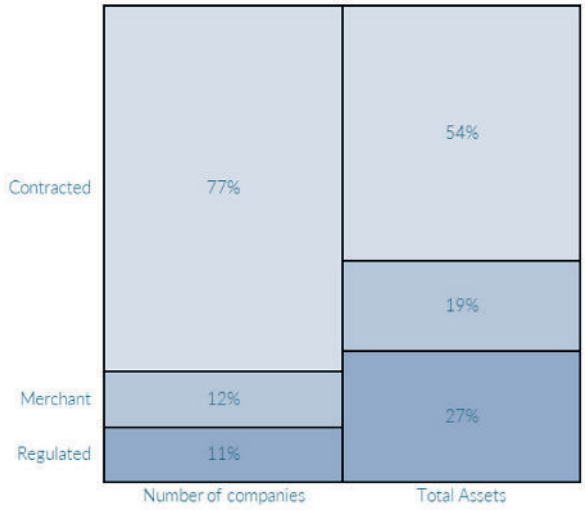
2020-2022: The decline aligns with the pandemic's economic disruptions. infrastructure assets tied to transport and merchant business models were particularly exposed to this effect. During the period, these sectors reliant on transportation traffic and commerce experienced significant declines due to disruptions in demand and economic activity. In 2021, the rate of change of cost of debt surged as shown in the chart above, due to rising interest rates and inflation concerns. This was followed by a decline in EV growth in 2022, a lagged inverse relationship where increased capital costs eventually reduced valuation.

2022-2023: Russia-Ukraine conflict led to a continued high rate of change of cost of debt, driven by inflation and rising interest rates. The rate of change of cost of equity also saw an upward trend due to geopolitical risks, impacting sectors like energy, where companies faced rising operational costs and volatile demand, particularly in Europe. These factors created uneven EV growth, with some energy companies benefiting from high prices while others faced cost pressures. The fluctuations in EV growth during this period reflect the mixed effects of higher operational and financing costs, along with an urgent shift towards renewable energy to enhance energy security amid geopolitical tensions.

Business Risk

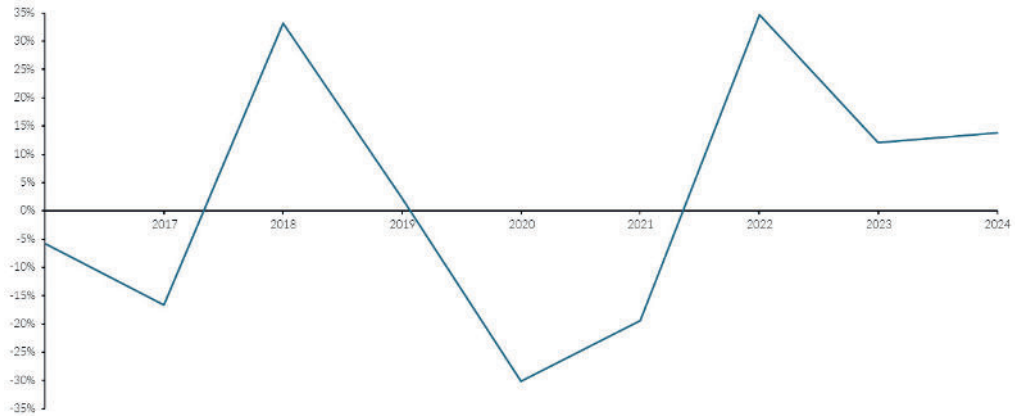
Business Risk

FIGURE 9: BUSINESS RISK BREAKDOWN BY UNIVERSE BY COUNT AND BY TOTAL ASSETS



The figure 9 above provides a comparative analysis of infrastructure assets across three categories: Contracted, Merchant, and Regulated. The Contracted category comprises 77% of the total number of companies, holding 54% of the total assets, indicating a high concentration of companies with a significant portion of assets under contract agreements. The Merchant category, with 12% of the companies, accounts for 19% of the total assets, reflecting a smaller yet asset-rich segment likely characterised by market-based transactions. The Regulated category contains 11% of the companies, representing 27% of the total assets, suggesting a fewer number of companies operating under regulatory oversight but with a substantial asset base. This distribution highlights the dominant presence of Contracted assets in terms of company count, while Regulated assets hold a considerable share of total assets despite fewer companies. The Merchant segment, though limited in number, possesses a notable share of assets, indicating its importance in the infrastructure market. This reveals a diverse infrastructure market structure with varying degrees of business risk and asset distribution.

FIGURE 10: GROWTH OF REVENUE BY MEAN IN IC601010 (AIRPORT) (EUROPE REGION BASED ON 35 CONSTITUENTS) – MERCHANT BUSINESS MODEL



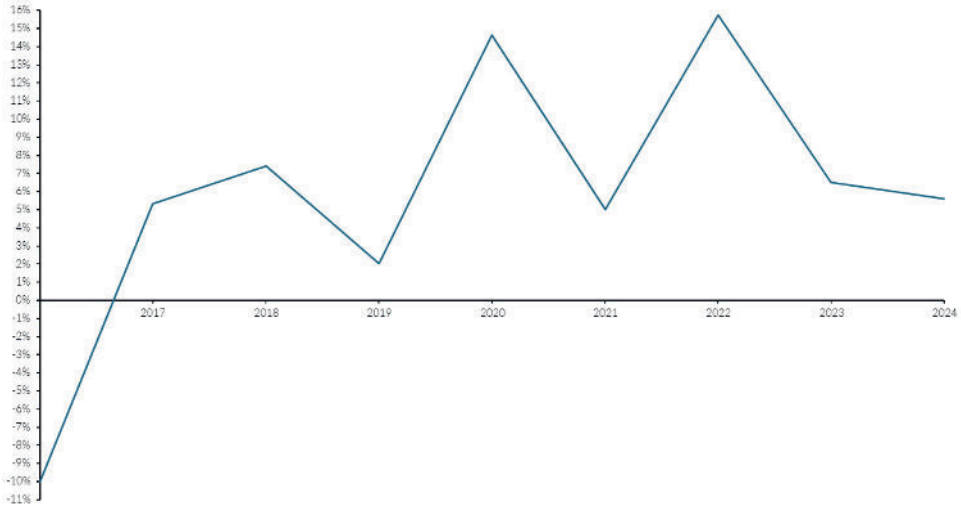
Business Risk

The figure 10 illustrates the revenue growth of merchant airports across 35 constituent airports in Europe from 2016 to 2024. The data indicates a pattern of significant fluctuations, characterised by notable growth peaks followed by steep declines. The most significant decline occurred in 2020, coinciding with the onset of the COVID-19 pandemic. During this period, global air travel experienced a dramatic reduction due to widespread lockdowns, travel restrictions, and decreased passenger demand. This situation directly impacted non-aeronautical revenue streams, such as retail, food, and parking, which are vital to the merchant business model.

The merchant model is heavily dependent on passenger footfall and discretionary spending within airport terminals. With a significant reduction in passenger volumes in 2020, airports experienced a substantial decline in commercial revenues, as depicted in the chart. The partial recovery observed in subsequent years reflects the gradual resurgence of air travel and passenger activity. This trend underscores the merchant model's sensitivity to macroeconomic shocks and external disruptions affecting consumer behaviour.

Regulated

FIGURE 11 : GROWTH OF REVENUE BY MEAN IN IC80 (NETWORK UTILITIES) (EUROPE REGION BASED ON 80 CONSTITUENTS) – REGULATED BUSINESS MODEL



The figure 11 illustrates the revenue growth trends of 80 regulated network utilities across Europe from 2016 to 2024. The data reveals a cyclical growth pattern, with significant declines in 2019, 2021, and 2023.

These dips in revenue growth are attributable to several factors inherent to regulated business models. Regulated utilities often experience revenue fluctuations due to the periodic review and adjustment of tariffs by regulatory authorities. These reviews typically occur every few years, potentially leading to temporary declines in growth if tariff increases are limited or operational

Business Risk

costs rise. Additionally, external factors such as economic slowdowns, changes in energy demand, or supply chain disruptions can contribute to these downturns.

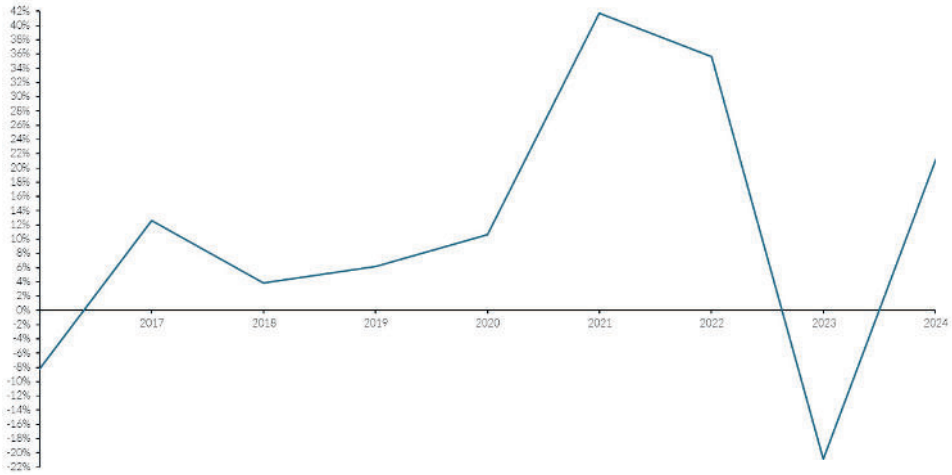
The subsequent peaks following these declines indicate that growth rebounds as utilities adapt to new regulatory frameworks, implement efficiency measures, or expand their infrastructure. This pattern underscores the inherent stability and predictability of regulated network utilities, which are less susceptible to market volatility but still subject to regulatory cycles.

Characteristics of regulated business model:

Rate-of-Return Regulation	Price-Cap Regulation
• This framework ensures tariffs cover costs, including operating expenses, depreciation, and a reasonable return on invested capital. Financial stability is crucial as defaults or breaches can disrupt cash flows and impact investment performance.	• Regulators set multiyear price limits based on inflation minus expected productivity improvements. This incentivizes firms to cut costs and enhance efficiency. Effective regulation prevents monopolies from setting high prices, ensuring fair pricing and accessibility for essential services like electricity, water, and gas.

Contracted

FIGURE 12: GROWTH OF REVENUE BY MEAN IN IC7010 (WIND POWER GENERATION) (EUROPE REGION BASED ON 420 CONSTITUENTS) – CONTRACTED BUSINESS MODEL



The figure 12 illustrates the progression of contracted wind farm revenue in Europe for 420 constituents over the period from 2016 to 2024. During the years 2016 to 2019, the growth trajectory was characterised by steady increments with moderate fluctuations. However, the years 2020 and 2021 witnessed a pronounced surge in revenue, attributable to the escalation in energy prices precipitated by the European energy crisis. Conversely, the year 2023 is marked by a significant downturn, which can be attributed to market recalibrations as the energy crisis

Business Risk

subsided, resulting in price normalisation and a reduction in subsidies. By 2024, the chart depicts a recovery phase, indicative of cautious yet renewed growth, in alignment with the European Union's long-term renewable energy objectives.

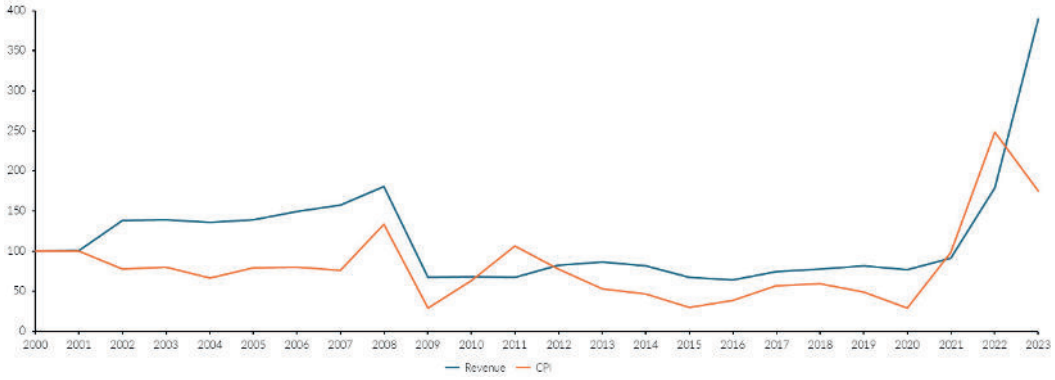
Stability and Risk Management

- Contracted business models, such as take-or-pay agreements and Public-Private Partnerships (PPPs), provide long-term agreements between infrastructure providers and public or private entities, ensuring stable revenue and efficient operation. These models mitigate performance risk by securing supply and fixing costs, as seen with Power Purchase Agreements (PPAs), which offer predictable pricing and reduce the impact of market fluctuations.

Inflation Protection

- Infrastructure investments often include inflation protection mechanisms tied to indices like the Consumer Price Index (CPI). This ensures that revenues automatically adjust with inflation, preserving purchasing power. An example is Collgar Wind Farm, whose revenue remained stable during the COVID-19 pandemic due to a Power Purchase Agreement that guaranteed fixed prices, shielding it from market volatility.

FIGURE 13: CONTRACTED REVENUE VS CPI ON CHANGES BETWEEN 2010 TO 2023 IN THE UNIVERSE (2000 = 100)



The figure 13 above shows the indexed trends of contracted revenue and inflation from 2000 to 2023, with 2000 as the base year (2000=100). The data reveals that both metrics have moved closely together, particularly in recent years, indicating a strong correlation, which supports that revenue is likely indexed to inflation. Additionally, the regression model indicates that 44% (R-squared value) of the variance in the revenue can be explained by changes in inflation, with coefficient of 0.93 and p-value of less than 0.05 confirmed the statistical significance of this relationship.

Thus, it demonstrates the inflation protection inherent in the contracted business models of the countries within the focus. It shows that revenue growth in these regions is strongly aligned with inflation trends, highlighting the stability and resilience of these models in the face of rising costs. The upward trajectory in revenue underscores how contractual agreements, which link earnings to inflation indices, drive this alignment.

Business Risk

TABLE 2: VOLATILITY FOR 3 DIFFERENT BUSINESS MODELS

Business Model	Volatility
Contracted	0.1312
Merchant	0.1999
Regulated	0.0634

Table 2 above presents the volatility of revenue for three business models associated with the universe's infrastructure assets. It reveals that the contracted business model has the second-lowest standard deviation among all three, at 0.1362. This relatively low standard deviation indicates a moderate level of stability and predictability in revenue streams, which can often be attributed to long-term fixed payments or availability-based contracts. Such agreements reduce exposure to market conditions, providing a more consistent income flow. However, the contracted model still carries some risk, as variability can occur due to factors such as contract adjustments for inflation or other escalation factors, performance-based clauses, or operational disruptions.

On the other hand, the merchant business model exhibits the highest standard deviation, at 0.1999. This higher figure indicates a significant level of revenue volatility and a greater sensitivity to market fluctuations. In merchant-based models, revenue is often tied to market prices and demand, leading to potentially large swings in income as market conditions change. This increased risk profile can affect financial planning and investment decisions, requiring more robust risk mitigation strategies to manage potential revenue shortfalls.

The regulated business model, with a standard deviation of 0.0634, demonstrates the least amount of volatility amongst the three business models. This low variability suggests a predictable and steady revenue stream, often due to regulatory oversight and rate-setting mechanisms that safeguard against market fluctuations. The nature of regulated models, with government or regulatory intervention in price-setting and operations, as well as providing the necessities of life supports a limitation to exposure to the economic and market disruptions, making it an attractive model for investors seeking lower-risk returns. Overall, these insights underline the differences in risk and revenue stability across the three business models, with regulated models offering the most predictability, merchant models presenting the highest risk, and contracted models striking a balance between the two.

Business Risk

FIGURE 14: BUSINESS MODEL BREAKDOWN BY COUNT FOR EACH REGION

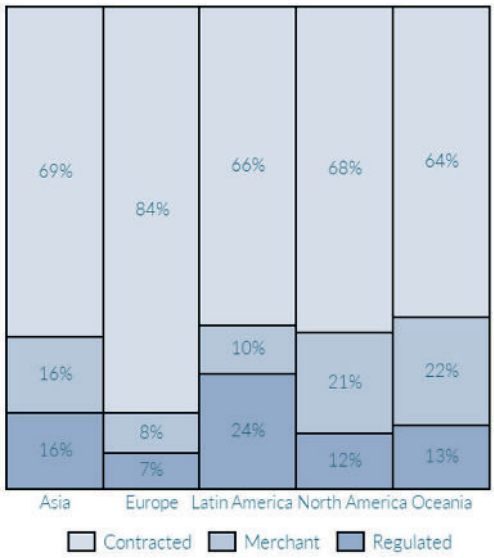
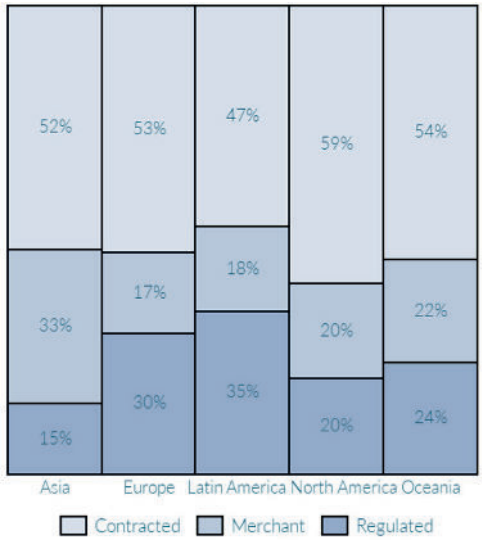


FIGURE 15: BUSINESS MODEL BREAKDOWN BY TOTAL ASSETS FOR EACH REGION



Figures 14 and 15 illustrate the distribution of number of companies and total assets across different business models, highlighting a significant presence of the Contracted model, where its share ranges from 64% to 84% and 47% to 59%, respectfully. This substantial share aligns with the capital-intensive nature of infrastructure projects in these regions, where contracted revenue streams provide the necessary stability for financing and maintaining high asset values.

The Regulated model, comprising between 7% to 24% of the number of companies and 20% to 33% of total assets, is notably prevalent in Europe and certain parts of Asia. These regions benefit from well-established regulatory frameworks, particularly in essential sectors such as utilities and transportation, which support steady and predictable returns.

Business Risk

In contrast, the Merchant model, with number of companies ranging between 8% and 22% and the total assets range between 15% and 35%, is more commonly found in emerging regions of Latin America and Asia. Here, market dynamics allow companies to accumulate assets with fewer regulatory constraints, reflecting a higher tolerance for market exposure and potential returns despite inherent risks. This variability in asset distribution underscores how regional market maturity and regulatory environments influence asset allocation across different business models.

In summary, the Contracted model dominates in regions where stability and predictability are prioritised, such as North America and Europe, both in terms of the number of companies and total assets. The Regulated model has a strong presence in Europe and parts of Asia, appealing to investors seeking steady returns with moderate risk. The Merchant model, while representing the smallest share in each category, finds its place in the emerging markets, particularly in Latin America and Southeast Asia, where investors and companies are more open to market exposure and potential returns despite inherent risks.

Industrial Classes

Industrial Classes

FIGURE 16: INDUSTRIAL BREAKDOWN OF THE UNIVERSE BY COUNT AND BY TOTAL ASSETS

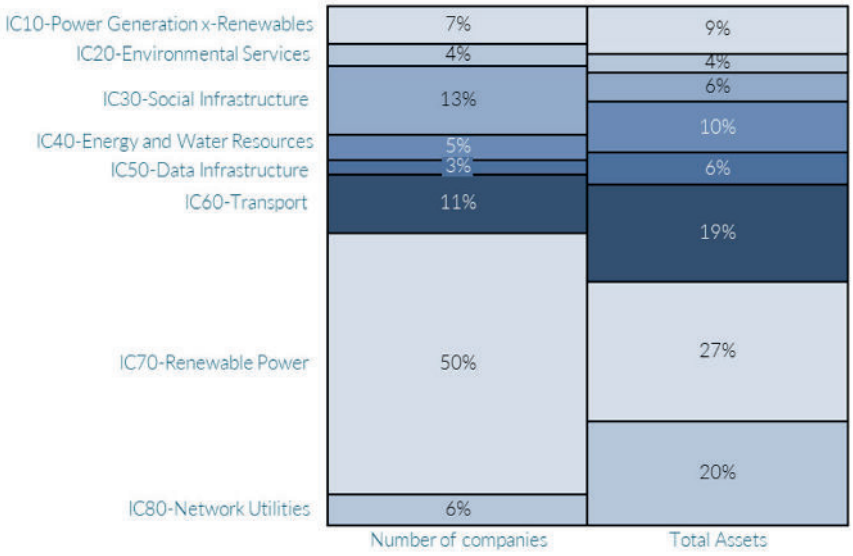


Figure 16 above presents a detailed analysis of infrastructure assets across various sectors in the universe. Renewable Power leads significantly with 50% of total assets and 27% of the number of companies, indicating a major investment focus in this sector. Network Utilities and Transport follow, holding 20% and 19% of the total assets, and 6% and 11% of the number of companies, respectively. Data Infrastructure and Social Infrastructure show lower asset and 3% and 13% of the number of companies, respectively. Energy and Water Resources, Power Generation excluding Renewables, and Environmental Services display modest asset shares 4%, 7%, and 4% of the number of companies, respectively. This distribution highlights a diversified infrastructure landscape with a substantial emphasis on renewable energy, followed by essential utilities and transport, while sectors like environmental services and data infrastructure have a smaller but significant presence. The data underscores the prioritisation of renewable energy and critical utilities in asset allocation within the infrastructure market.

The infrastructure sector's evolving landscape reflects diverse regional and industrial trends, influenced by advancements in technology, regulatory priorities, and shifts toward sustainability. Across the globe, data infrastructure, renewable energy, and transportation networks have emerged as pivotal asset classes, each shaped by unique economic, geographical, and policy drivers. The following section delves into these developments.

Industrial Classes

FIGURE 17: TREND OF IC50-DATA INFRASTRUCTURE IN SINGAPORE FOR PAST 8 YEARS BY TOTAL ASSETS (USD IN MILLION)

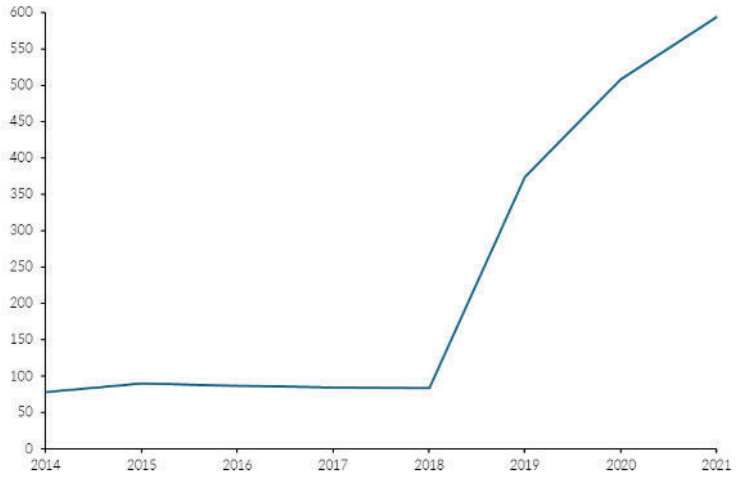


Figure 17 above provides a compelling illustration of the surge in IC50-Data Infrastructure in Singapore over the past eight years. Starting with approximately 100 million USD in 2014 in total assets, where it stays as similar range for the next five years. Following the COVID-19 outbreak in 2020, there is a significant surge for this industry which drove the total asset to approximately 400 million USD. The substantial growth of IC50-Data infrastructure is primarily due to the swift adoption of cloud technologies in the region during the COVID period. Cloud technologies have revolutionised the way data is stored and accessed, leading to a significant increase in the demand for data infrastructure. This trend is particularly evident in Singapore, a country that has experienced a remarkable expansion in their data centre sectors. Digital transformation initiatives have been rapidly adopted across various industries in Singapore. These initiatives often involve the migration of data and services to the cloud, thereby increasing the demand for robust data infrastructure. Besides, there has been a marked increase in internet connectivity in Singapore. With more people and devices connected to the internet, the volume of data being generated and consumed has skyrocketed. This has necessitated the development of more data centres to handle this surge in data traffic. This underscores the strategic importance of Singapore as a hub for data infrastructure in the region.

Figure 18 illustrates a steady decline and plateau of the IC10-Power Generation x-Renewables assets from 2014 onwards. This trend is largely influenced Government policy promoting renewable electricity. The significance of this shift is amplified when considering the disruptions in the supply of fossil fuels and subsequent price spikes, specifically, 2022.

The global escalation in fossil fuel prices, government subsidies, and improvements in production and technology boosted the competitiveness of renewable energy sources like solar photovoltaics (PV) and wind power, making them increasingly viable alternatives to traditional fossil fuels. This shift contributes to the observed downward trend in IC10-Power Generation x-Renewables.

Industrial Classes

Additionally, the levelized cost of electricity (LCOE) for renewable energy is now lower than that of non-renewable sources due to several factors: technological advancements have improved efficiency and reduced production costs, economies of scale have decreased costs further, and renewable sources have minimal fuel costs compared to fossil fuels. Government incentives, such as subsidies and tax breaks, also lower the LCOE for renewables. Moreover, renewables have lower environmental and health costs, avoiding the additional expenses associated with pollution and greenhouse gas emissions. Consequently, generating electricity from renewable sources is now cheaper on average over the lifetime of the energy project, making renewables both environmentally friendly and economically advantageous. In parallel, Europe has been making significant strides in phasing out fossil fuels. The European Union has set ambitious targets to reduce greenhouse gas emissions, increase energy efficiency, and raise the share of renewable energy. These initiatives are part of a broader strategy to transition towards a more sustainable and resilient energy system, reducing the continent's dependence on fossil fuels.

In contrast, IC70-Renewable Power has experienced a notable surge during the same period.

FIGURE 18: TREND OF IC70-RENEWABLE POWER & IC10-POWER GENERATION X-RENEWABLES IN EUROPE FOR PAST 8 YEARS BY TOTAL ASSETS (USD IN BILLION)

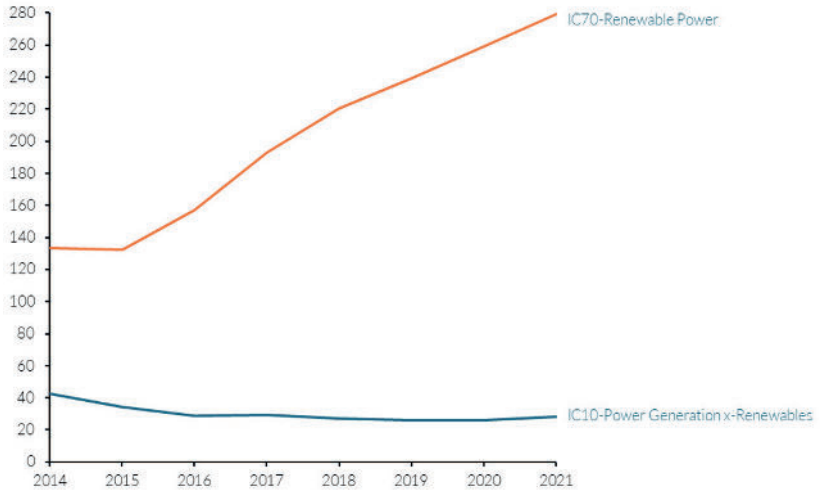
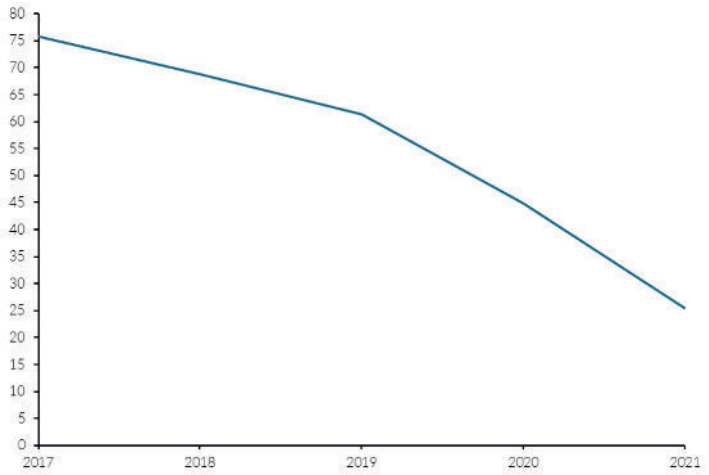


FIGURE 19: TREND OF IC60-TRANSPORT IN LATIN AMERICA BY TOTAL ASSETS (USD IN BILLION)



Industrial Classes

The transport sector in Latin America has faced several challenges over the past several years, leading to a less favourable trajectory. Rapid population growth and urbanisation have intensified mobility challenges in Latin American cities, due to the widespread use of motor vehicles. These challenges include high rates of congestion, frequent traffic accidents, and pollution. Despite a substantial portion (68%) of passenger travel relying on public transit or shared systems in the cities, the quality of available public transport remains inadequate, and the supply of high-quality public transport has not kept pace with the growing demand for transportation (Yañez-Pagans, Paola, Daniel Martinez, Oscar A. Mitnik, et al, 2019.).

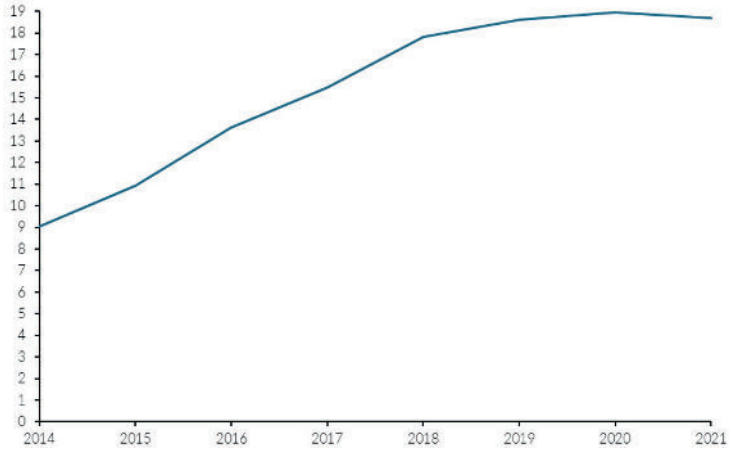
Additionally, increased incomes and policies encouraging car purchases have contributed to a surge in motorisation rates, putting additional strain on urban transport infrastructure.

Insufficient investment in the transportation sector, challenges with road infrastructure and traffic congestion (Traxall International, 2024.), have hindered the sector's ability to meet the needs of expanding urban populations. Moreover, government budget constraints and fiscal problems (Lele, Uday, et al, 2024.) and service providers' financial sustainability challenges resulted in many operators struggling to cover their operational costs. Hence, productivity of public transportation has stagnated or even decreased over time. Poor infrastructure and specialisation in transport-intensive goods have affected regional export disparities and as such, have affected the transportation sector.

One of the biggest transportation companies based in Chile, Empresa De Transporte De Pasajeros Metro S.A., is engaged in the provision of passenger transport services in metropolitan railways. It holds the largest portion of total assets. Due to government measures aimed at curbing the spread of Covid-19, including restrictions on people's movement and shifts in demand, the Metro system has witnessed a substantial decline in passenger numbers compared to the pre-pandemic year of 2019.

Overall, the Latin American transport sector faces multifaceted challenges, from inadequate infrastructure to rising costs.

FIGURE 20: TREND OF IC60-TRANSPORT IN NORTH AMERICA BY TOTAL ASSETS (USD IN BILLION)



Industrial Classes

Over the past decade, the transport sector in North America has witnessed an increase in total assets. Despite occasional downturns, such as in 2020, the overall economy has experienced steady growth. As economic activity expands, so does the demand for transportation services, leading to increased investment in transport infrastructure and assets. The rise of e-commerce industry has also driven changes in transportation patterns. Companies are adapting to meet the demands of online shopping, resulting in shifts between transportation modes (e.g., from traditional retail to last-mile delivery). The industry has become more efficient in using trucks and trailers, optimising their capacity, and reducing waste.

Many sectors have embraced nearshoring, relocating production and sourcing closer to their markets. This trend has led to increased trade between North American countries, driving demand for transportation services. Investments in rail infrastructure have supported freight movement across the continent, as rail remains a critical conduit for transporting goods within North America.

Terminal segment growth within the North America aviation infrastructure market has witnessed remarkable growth. Several airport terminal construction projects have been undertaken in the region to address airport bottlenecks and enhance aviation operations. Notable examples include the construction of a new terminal at Dallas Fort Worth International Airport (Terminal F), which is expected to be completed by 2026 with 15 gates at a cost of USD 1.6 billion.

One of the biggest transportation companies in the universe is LaGuardia Gateways Partners LLC, a U.S. airport terminal development and redevelopment services including the construction and operation of terminals. Majority of its total assets come from contract assets, where it represents revenue recognised from the satisfaction, or partial satisfaction, of performance obligations in advance of the Company's right to invoice the customer. In this case, the net contract asset is expected to be recovered from future cash flows from the Operations and Maintenance Project performance obligation through the end of the Port Authority Lease.

Another top transportation company is a Canadian firm, Greater Toronto Airports Authority, the operator of Pearson International Airport. Large assets size mainly contributed by property and equipment, including acquisition and construction of property and equipment, where the bulk of its assets represents buildings and structures, bridges and approach systems, and runways and taxiways known as "terminal and airside assets".

To enhance the resilience and effectiveness of Canada's transportation sector, the government is implementing substantial actions. Announced in 2022, a $603.2 million investment aims to establish secure and streamlined supply chains for the next five years (Expert Market Research, 2024.). These initiatives contribute to the modernisation of Canada's marine and railway transportation systems, positioning its ports as vital hubs for international trade and sustained economic growth.

Industrial Classes

In essence, North America's infrastructure sector in the transportation and renewable power sector is poised for growth, driven by strategic investments, renewable energy initiatives, and collaborative efforts.

FIGURE 21: TREND OF IC70-RENEWABLE POWER & IC10-POWER GENERATION X-RENEWABLES IN OCEANIA FOR PAST 8 YEARS BY TOTAL ASSETS (USD IN BILLION)

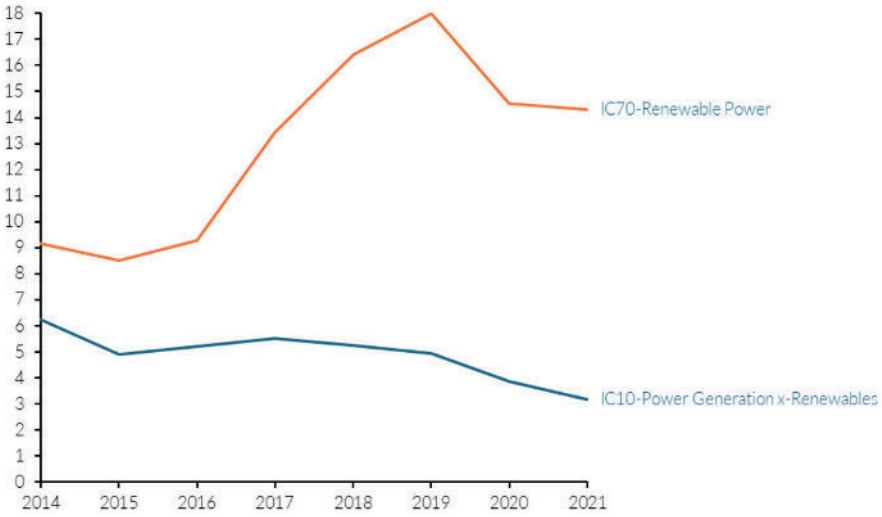


Figure 21 presents the energy sector's evolution over the years, specifically from 2014 onwards. It highlights a consistent downward trend in the IC10-Power Generation x-Renewables, indicating a decrease in the reliance on traditional power generation methods that are not environmentally friendly. Simultaneously, there is a noticeable upward trajectory in IC70-Renewable Power, signifying a shift towards more sustainable and eco-friendly power sources. Despite being a significant producer of fossil fuels, the Oceania region, with Australia at the forefront as a major exporter of coal and Liquefied Natural Gas (LNG), is not solely dependent on these resources. This region has renewable energy potential. The geographical and climatic conditions of this region make it a rich reservoir of solar, wind, and hydroelectric resources.

One of the standout renewable assets in Oceania is the Battery Energy Storage System (BESS) Projects. These projects are characterised by their large-scale storage systems that employ battery technology to store electricity. They serve as a testament to the technological advancements in the renewable energy sector. These projects play a pivotal role in Australia's transition to renewable energy. As they ensure a steady supply of electricity even when renewable sources like wind and solar are not producing power, thereby addressing one of the main challenges associated with renewable energy - intermittency. This reliability is crucial in encouraging more widespread adoption of renewable energy and moving away from fossil fuels.

Industrial Classes

FIGURE 22: INDUSTRIAL CLASSES BREAKDOWN BY COUNT FOR EACH REGION

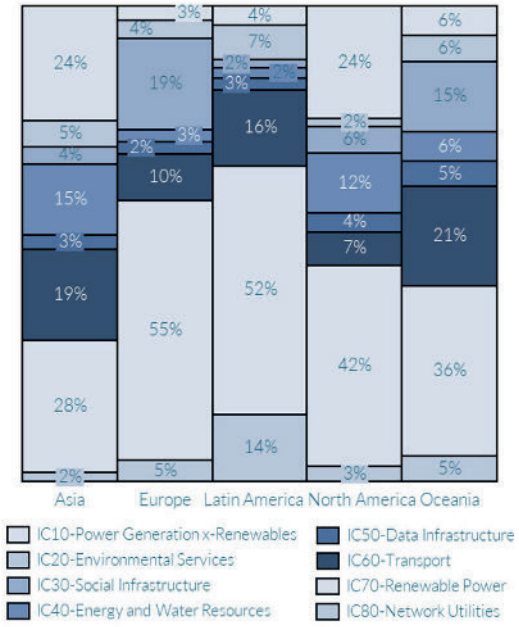
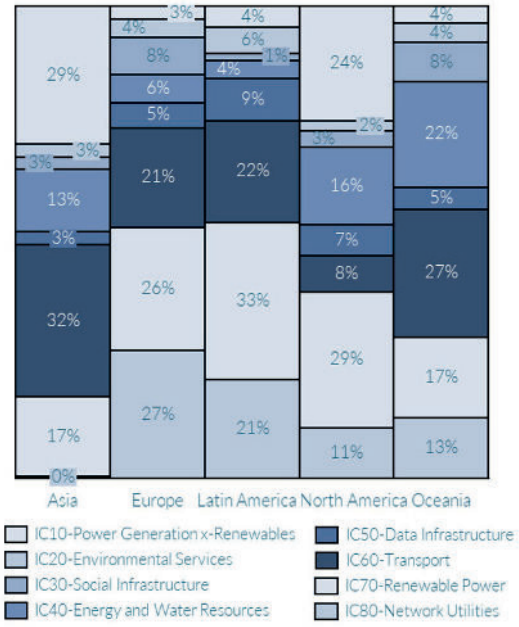


FIGURE 23: INDUSTRIAL CLASSES BREAKDOWN BY COUNT FOR EACH REGION



Within Asia's Industrial Superclass, the IC60-Transport category stands out as particularly prominent, commanding 32% of total assets with 19% of the number of companies. This substantial share underscores a significant focus on transportation, driven by the ongoing urbanisation across the region. Following closely is the IC10-Power Generation x-Renewables category, which accounts for 29% of total assets and 24% of the number of companies.

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This indicates a continued reliance on traditional power generation methods, while also highlighting a growing emphasis on renewable energy sources. The IC70-Renewable Power category is also noteworthy, representing 17% of total assets and 28% of the number of companies. This reflects the region's substantial investment in renewable energy. Additionally, the IC40-Energy and Water Resources category makes significant contributions, comprising 13% of total assets and 15% of the number of companies. The remaining categories, which include IC20-Environmental Services, IC30-Social Infrastructure, IC50-Data Infrastructure, and IC80-Network Utilities, hold smaller shares ranging from 0.40% to 2% of total assets and 2% to 5% of number of companies. In Europe, various categories each play a pivotal role in shaping the industrial landscape. The most prominent category within this sector is IC80-Network Utilities, which holds a substantial 27% of total assets and 5% of the number of companies. This underscores the critical importance of network utilities in Europe's infrastructure investment landscape, highlighting their essential role in maintaining and developing the region's infrastructure. Following closely is the IC70-Renewable Power category, which accounts for 26% of total assets and 55% of the number of companies. This significant share indicates a strong and growing focus on renewable energy sources, reflecting a shift towards sustainable power generation methods alongside traditional ones.

The emphasis on renewable power is a testament to Europe's commitment to reducing carbon emissions and promoting environmental sustainability. The IC60-Transport category is another significant Industrial Superclass, representing 21% of total assets and 10% of number of companies, respectfully. This highlights the increasing emphasis on transport infrastructure, which is crucial for the region's industrial development and economic growth. Efficient transport systems are vital for the movement of goods and people, thereby supporting various other sectors within the economy. The remaining categories, including IC50-Data Infrastructure, IC40-Energy and Water Resources, IC30-Social Infrastructure, IC20-Environmental Services, and IC10-Power Generation x-Renewables, hold smaller shares ranging from 3% to 8% of total assets and 2% to 19% of the number of companies. Despite their relatively smaller shares, these categories contribute significantly to the sector's diversity and complexity. Each category, regardless of its asset share, plays an essential role in the comprehensive industrial development of Europe's Industrial Superclass.

Renewable Power dominates the Latin American market, comprising 33% of total assets and 52% of number of companies. Chile and Brazil are leading the region's renewable energy efforts, leveraging their natural resources and supportive policies to attract significant investments. Chile's favourable conditions, such as high solar irradiance in the Atacama Desert and strong coastal winds, make it a prime location for solar and wind projects. In 2022, Chile invested approximately $2 billion in renewable energy, driven by its commitment to net-zero emissions by 2050. Brazil, a renewable energy leader, heavily relies on hydropower and has substantial solar and wind capacities. In 2022, Brazil's renewable energy investments reached $25 billion, the highest in Latin America. Other key sectors include Network Utilities (21% of total assets and 14% of the number of companies) and Transport (22% of total assets and 16% of the

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number of companies). Data Infrastructure, Energy and Water Resources, Social Infrastructure, Environmental Services, and non-renewable Power Generation also contribute to the region's industrial landscape.

Within the North America region, Renewable Power comprises the highest proportion of 29% of total assets and 42% of the number of companies. This is followed by Power Generation excluding Renewables, which accounts for 24% of total assets and 24% of the number of companies. Other notable sectors include Network Utilities (11% of total assets and 3% of number of companies), Transport (8% of total assets and 7% of number of companies), Data Infrastructure (7% of total assets and 4% of number of companies), Energy and Water Resources (16% of total assets and 12% of number of companies), Social Infrastructure (3% of total assets and 6% of number of companies), and Environmental Services (2% of total assets and 2% of number of companies). These sectors collectively contribute to the region's infrastructure development, with a notable focus on sustainable and renewable energy sources.

In the diverse sector of the Industrial Superclass in the Oceania region, IC70-Renewable Power emerges as a clear leader, holding a commanding position with 17% of total assets and 36% of the number of companies. This dominance underscores the growing importance of investment in renewable energy sources, reflecting a global trend towards sustainability and environmental consciousness. Following closely is IC60-Transport, which holds 27% of total assets and 21% of the number of companies. This indicates the critical role of transport infrastructure in supporting economic activity and connectivity in the region. IC40-Energy and Water Resources also contributes significantly, with 22% of total assets and 6% of the number of companies, reflecting the importance of energy production and water management in supporting both industrial and residential needs. IC30-Social Infrastructure represents 8% of total assets and 15% of the number of companies, encompassing essential services and facilities that contribute to the social well-being and quality of life of communities. The remaining categories include IC80-Network Utilities (13% of total assets and 5% of number of companies), IC50-Data Infrastructure (5% of total assets and 5% of number of companies), IC20-Environmental Services (4% of total assets and 6% of number of companies), and IC10-Power Generation x-Renewables (4% of total assets and 6% of number of companies). Each of these sectors represents different facets of the industrial superclass, from power generation to environmental services, data infrastructure, and network utilities, highlighting the diverse nature of the industrial sector in Oceania. Their shares, while smaller, are no less important in shaping the industrial landscape and driving growth in the region.

Geoeconomic

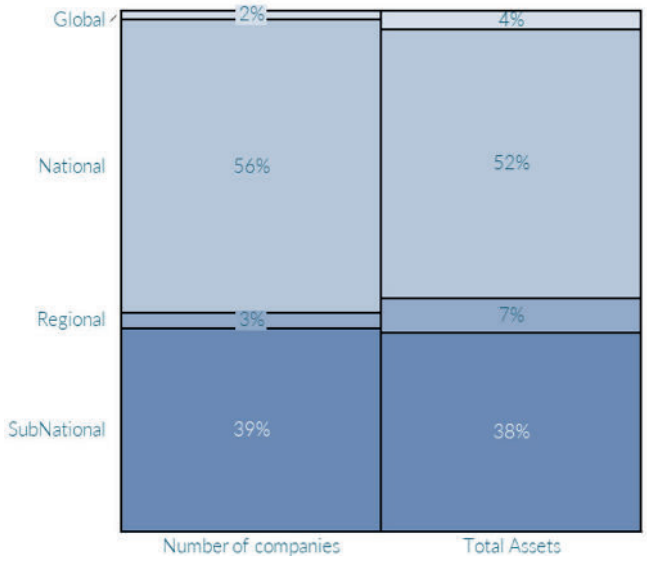
Geoeconomic

The third TICCS® pillar classifies infrastructure companies into four levels of geoeconomic exposure that aids in understanding the risks associated with various macroeconomic factors when analysing infrastructure investments that are relevant to different geographical exposures.

Infrastructure investment is influenced by the interplay of political stability, regulatory environments, trade policies, and economic factor exposures. As such, geo-economic exposure shapes the risk and return profile of infrastructure investments, influencing costs, financing, revenue, and strategic choices. By understanding and mitigating these risks, investors can make informed decisions to protect and optimise the long-term viability of infrastructure assets.

Current geopolitical tensions and economic fragmentation pose significant risks to infrastructure companies, whether they operate internationally or within a single country. Even domestically focused companies can face disruptions to their supply chains due to international policies, geopolitical conflicts, and global power dynamics.

FIGURE 24: GEOECONOMIC CLASSIFICATION BY COUNT, AND TOTAL ASSETS



The infrastructure sector is dominated by national and subnational companies, as observed in the private infrastructure universe, with little to no difference when it comes to comparing the different levels of geoeconomic exposures by the number of firms against their total assets. Amongst the four levels of exposures, companies exposed to global and regional risks contribute fewer numbers of firms, alongside assets as infrastructures tend to be more localised with national and subnational entities. More will be discussed in detail across the different regions within the universe.

In Asia, the majority of companies are operating at the national level, where 68% of companies in the area are exposed to the national economy, e.g., domestics airports and national electricity

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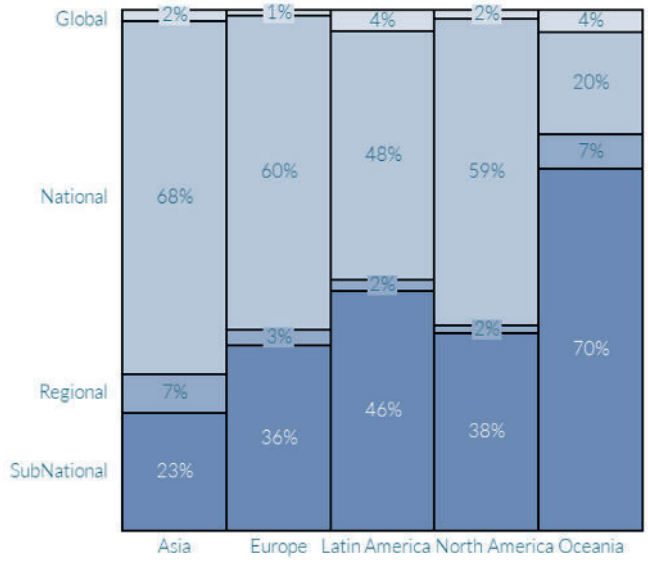
transmission assets, and is relevant to the national government or regulator. This pattern appears to be consistent across other regions observed within the private infrastructure universe as shown in Europe, 60%, Latin America, 48%, and North America, 59%. Regions like Asia, Europe, Latin America, and North America operate infrastructure with a stronger emphasis on national or regional coordination compared to Oceania, largely due to differences in political structures, population distribution, and economic integration.

FIGURE 25: GEOECONOMIC CLASSIFICATION BY COUNT, BY GEOGRAPHICAL REGION



As for Oceania, only 20% of companies are geoeconomically exposed at the national level, whereas a significant portion, 70%, comes from subnational entities, since Oceania's infrastructure sector is primarily driven by its decentralised governance, urban population concentration and distinct regulatory systems. For example, a Network Utilities company (e.g., Keppel DHCS Pte Ltd) in a country as small as Singapore can be sensitive to national economic trends and policy changes, thus is classified under the 'National' level of geoeconomic exposure whereas an Australian company (e.g., SA Power Networks) limited to electricity distribution at the state level under regulatory framework and infrastructure constraints is classified under the 'Sub-national' level. The limitation in geographic exposure is important in recognising legal and operational constraints, thereby affecting infrastructure investment opportunities and decisions.

Companies exposed to global and regional risks hold a much smaller weightage across all regions in the universe, due to several key factors including economies of scale, geographic spread of demand, and regulatory considerations.

Asia

In Asia, countries like Singapore, Malaysia, and the Philippines often adopt more centralised approaches to infrastructure to ensure alignment with national development goals. In Singapore,

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the government plays a strong role in planning and executing infrastructure to meet urban and economic needs, given its small geographic size and high population density. Malaysia also utilises centralised infrastructure plans to support its economic development goals, while the Philippines relies on national programs to address widespread infrastructure needs across its archipelago.

These countries also have high urban densities in major cities, which are often interconnected through national infrastructure to support economic activity. Singapore, for instance, uses a highly integrated infrastructure network managed centrally to cater to its dense urban population.

North America

In North America, despite having federal systems, the United States and Canada, have strong national frameworks for infrastructure planning. National agencies (such as the U.S. Department of Transportation or Infrastructure Canada) oversee extensive national projects, like interstate highways and transnational energy grids, that connect cities and regions. Many regions in these two countries also have extensive urban centres that require national-level infrastructure (like highways and energy systems) to connect metropolitan areas. Additionally, the U.S. and Canada have federal funding programs that promote national infrastructure projects, such as the U.S. Federal Highway System and Canada's Infrastructure Investment Programs, thus incentivising companies to operate at the national level, in turn reducing the emphasis on sub-national focus.

Europe

In Europe, economic interdependence encourages nations to build infrastructure that facilitates regional connectivity. For instance, European countries rely on national and EU standards to ensure cohesive infrastructure across borders thus increasing national-level risk to infrastructure companies in the region. The European Union’s integration policies encourage transnational infrastructure development, connecting countries through extensive networks like rail, road, and energy grids. The EU’s Trans-European Transport Network (TEN-T) exemplifies this, as it links major cities across national borders. This coordinated effort at the national and regional levels promotes large-scale, standardised infrastructure that benefits the entire EU, as such, promotes national exposure to infrastructure companies. Additionally, high-density urban regions in Europe require national or regional infrastructure networks to connect cities efficiently, resulting in a focus on cohesive, large-scale infrastructure projects managed at the national or EU level rather than a sub-national focus.

Latin America

In Latin America, Brazil and Chile’s national governments play an instrumental role in major infrastructure projects to support economic growth, trade, and social development. For example, Brazil offers federal or national incentives for infrastructure projects, supporting large-scale developments in transportation, energy, and telecommunications that align with economic goals, such as attracting foreign investment or enhancing regional trade.

Geoeconomic

Regions like North America and Europe are geographically continuous, making national and cross-border infrastructure more practical. Likewise, Latin America has geographically vast, economically interconnected regions, thus making large-scale, national infrastructure systems more practical and efficient. This promotes a focus on national or even regional integration over sub-national projects.

Oceania

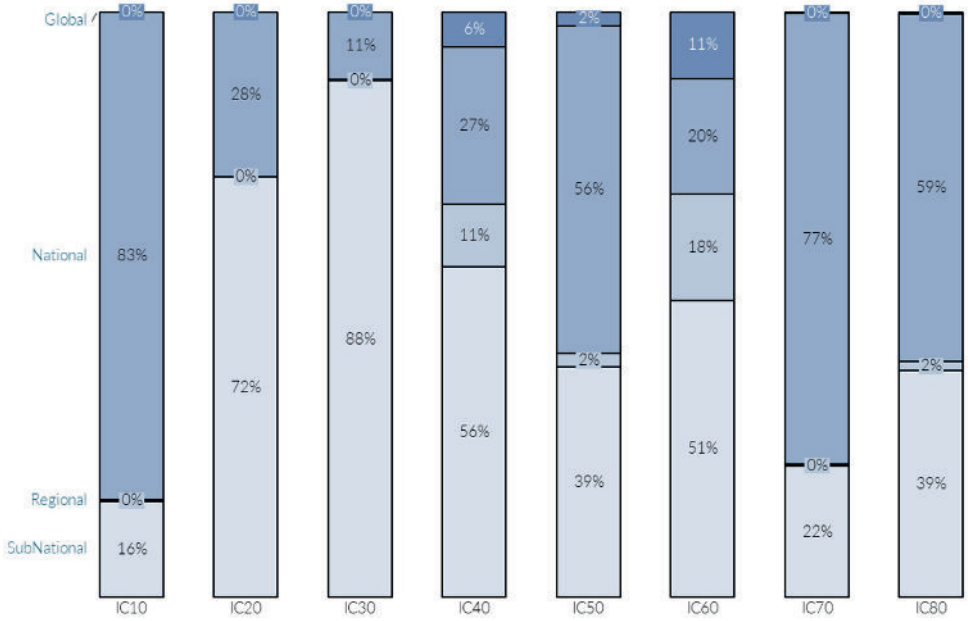
70% of companies in Oceania are subnational entities. This is because Oceania's high degree of subnational exposure in infrastructure is largely due to its decentralised governance, concentration of population in urban centres, specific regulatory frameworks, and unique geographic characteristics. Infrastructure projects are often tailored to the needs of individual states, cities, or smaller islands, leading companies to focus on sub-national rather than national operations. Australia's federal system grants states and territories substantial autonomy over infrastructure decisions. This is outlined in the Intergovernmental Agreement on Federal Financial Relations (IGA FFR), which defines the roles and responsibilities of federal and state governments in infrastructure funding and delivery. The agreement emphasises that state and territory governments are primarily responsible for their land transport networks, including ownership, operation, and maintenance of assets, as well as co-investment in infrastructure projects (Department of the Treasury, 2021). As such, states (e.g., New South Wales, Victoria, etc.) have significant control over their transportation, utilities, and public infrastructure, resulting in more subnational focused operations. New Zealand's infrastructure development and management are also primarily managed by local governments as outlined in the Local Government Act 2002 legislation (New Zealand Government, 2002), empowering local authorities to make decisions on infrastructure services such as water supply, wastewater, stormwater, and local roads. To bolster the vision, regulations such as the Land Transport Management Act 2003, Three Waters Reform Programme, and Provincial Growth Fund further emphasise the country's support for states' operational independence.

In comparison to other regions in the universe, Oceania prioritises a sub-national approach due to its decentralised governance, dispersed geography, and specific local infrastructure requirements, as such has more companies exposed to subnational risks in that region. Whereas areas such as Asia, Europe, North America, and Latin America focus on national infrastructures, driven by closer geographic proximity, denser populations, centralised or federal governance, and motivations for larger-scale projects, have more risks on the national-level.

Hence, economic exposure of different infrastructure companies, especially in different regions, highlights the relevant risks associated with the company. In the following sections, the national-level exposure of industries across different regions will be highlighted.

Geoeconomic

FIGURE 26: GEOECONOMIC CLASSIFICATION BY COUNT, BY INDUSTRIAL CLASS



Global & Regional Level

As shown in the figure 26 above, global and regional-level risks make up only a small portion of the overall universe.

This is because, to scale an infrastructure internationally or across nations largely depends on the nature and objective of the investment. Infrastructures such as airports are large-scale projects that require substantial initial capital outlay and extensive resources for construction, operations, and maintenance, representing a significant commitment of financial and operational resources. To be viable, it must serve a high concentration of demand. Since not all regions or localities have the passenger traffic to justify an airport, this further limits the number of feasible projects, especially international over regional ones.

Regional infrastructure like liquid storage facilities (e.g., The Kikeh Floating Production Storage and Offloading) serves as a regional hub for offshore oil production. They are costly, highly specialised projects designed to store large volumes of oil offshore. Their maintenance and operational costs are substantial, and they require significant coordination with regional oil markets. Due to their large scale and complex nature, these floating storage facilities are generally less common than smaller, land-based facilities.

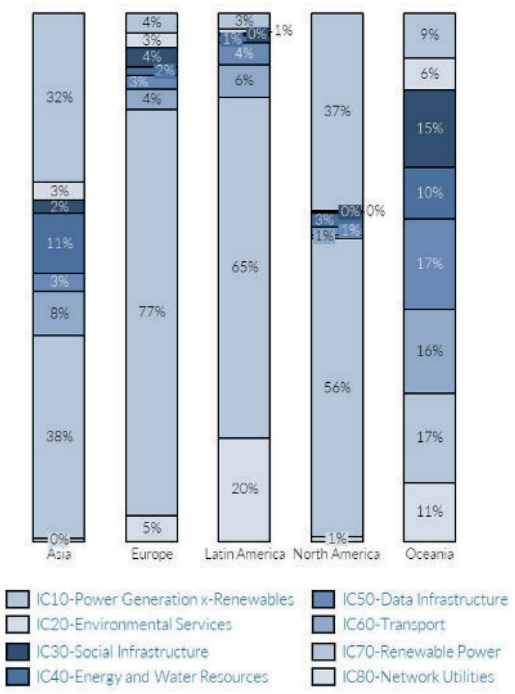
Since these global and regional projects often face extensive regulatory requirements due to their cross-jurisdictional impacts (e.g., airspace regulation, international transport agreements). This regulatory burden raises costs and complexity, making private investors more cautious and reducing the number of viable projects.

Geoeconomic

In contrast, national and subnational-level risks, (e.g., wind farms) can be scaled up or down and are comparatively less capital-intensive, can be economically viable even in less populated or lower-demand areas. As infrastructure projects aim to meet local needs, such as energy and healthcare, they must be accessible to end users, necessitating a broad geographic distribution. Wind farms or solar arrays, for instance, can be set up across rural and urban areas, and multiple farms can collectively generate substantial capacity without the need for massive, centralised infrastructure. Moreover, many governments provide incentives for renewable energy projects (e.g., tax credits, subsidies) as part of national energy policy. This support reduces entry costs for investors and makes renewable projects more appealing, contributing to the higher count of assets like wind farms compared to airports, which receive less direct investment support due to complex international regulatory requirements.

National & Subnational level

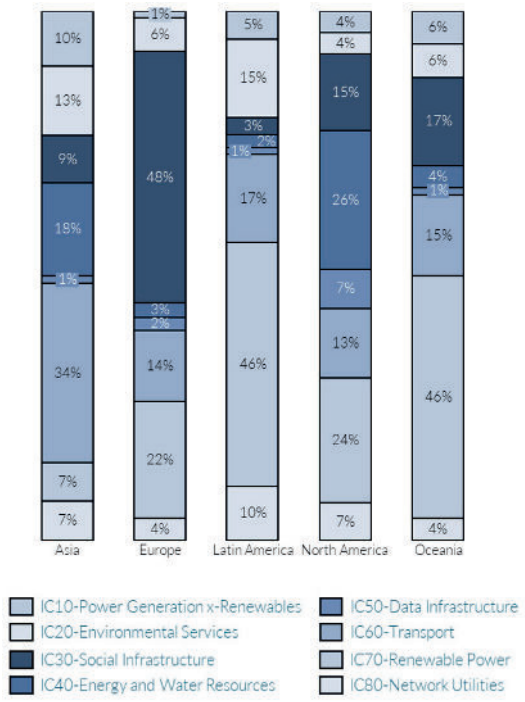
FIGURE 27: GEOECONOMIC CLASSIFICATION BY NATIONAL-LEVEL, BY COUNT, BY INDUSTRIAL CLASS, BY GEOGRAPHICAL REGION



From a national-level standpoint, renewable power infrastructures represent a large portion in Europe, Latin America, and North America. The renewable energy industry is highly dependent on government policies, subsidies, and local regulatory frameworks. Therefore, changes in government, shifts in policy priorities, or subsidy cuts can significantly impact renewable energy projects thus, exposing firms to national regulatory risk. Moreover, the integration of renewable power into the national grid often faces technical and regulatory hurdles. Further reliance on local grid infrastructure ties companies closely to national conditions and policies, which impacts how and where companies can expand.

Geoeconomic

FIGURE 28: GEOECONOMIC CLASSIFICATION BY SUBNATIONAL-LEVEL, BY COUNT, BY INDUSTRIAL CLASS, BY GEOGRAPHICAL REGION



From a national-level standpoint, renewable power infrastructures represent a large portion in Europe, Latin America, and North America. The renewable energy industry is highly dependent on government policies, subsidies, and local regulatory frameworks. Therefore, changes in government, shifts in policy priorities, or subsidy cuts can significantly impact renewable energy projects thus, exposing firms to national regulatory risk. Moreover, the integration of renewable power into the national grid often faces technical and regulatory hurdles. Further reliance on local grid infrastructure ties companies closely to national conditions and policies, which impacts how and where companies can expand.

From the subnational-level standpoint, social infrastructure in Europe holds a higher proportion. The relatively large investment in social infrastructure reflects a commitment to maintaining and improving these systems, recognising their role in social stability, economic resilience, and the overall quality of life. This sector is heavily focused on the subnational level due to assets servicing local communities, such as designing educational facilities or healthcare assets for aging communities.

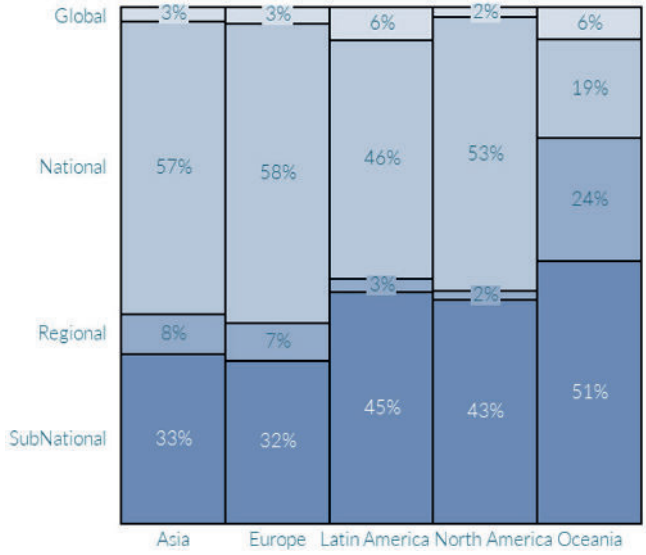
As for Regional level, the renewable power sector contains the highest proportion amongst other industries. In Latin America, political and social dynamics can vary significantly within a country, leading to different levels of support or opposition for renewable projects in different regions. As such, contributing to a considerable number of subnational focus projects too, since local communities

Geoeconomic

may have differing views on renewable projects based on cultural, environmental, or economic concerns, influencing where and how renewable projects are developed. And as previously mentioned, Oceania's high degree of subnational exposure in infrastructure is largely due to its decentralised political systems, hence the risks and regulations associated with renewable projects can vary widely across regions, leading to more localised or subnational risk profiles rather than a unified national risk profile.

Geoeconomic classifications highlight regional differences in infrastructure priorities within different levels of geoeconomic exposures, reflecting local economic and resource needs.

FIGURE 29: GEOECONOMIC CLASSIFICATION BY TOTAL ASSETS, BY GEOGRAPHICAL REGION



As mentioned earlier, regions in Asia, Europe, Latin America and North America have more companies that are exposed to national-level risk because infrastructure in those regions serves the national economy, particularly with the support of national funding for such projects or through the fact the markets served by the infrastructure are national by design.

Oceania, however, is the only divergence in the pattern observed previously with 51%, of total assets, in the subnational-level risk category compared to the number of companies, 70%. This difference in proportion is mostly spread over companies with national-level risk as Oceania's smaller demand, decentralised funding, and the concentration of strategic assets in a few large companies create a non-proportional relationship between the number of assets and the value of these assets. This results in an increase in numerous small-scale providers that contributes to a smaller share of total assets due to limited assets, revenue potential, and investment opportunities. In contrast, national-level companies in Oceania, while fewer, manage large, high-value assets and attract more investment, contributing significantly to the region's overall total assets.

Geoeconomic

Amongst all four geoeconomic exposure groupings across all regions in all three metrics, it is observed that there are much fewer infrastructure companies exposed to global economic factors and a group of national economics, than there are of those exposed to national and local risks. Global and regional infrastructure assets carry less weight compared to national and subnational assets due to the focus on addressing local needs, regulatory hurdles, funding and ownership issues, restricted cross-border project scope, investment preferences, national sovereignty issues, and geographic limitations.

Moreover, from the investors' perspective, national and subnational assets are managed, funded, and regulated within individual countries, making them more appealing and viable for long-term infrastructure investment.

TABLE 3: UNIVERSE BY GEOECONOMIC CLASSIFICATION BY TOTAL ASSETS, BY INDUSTRIAL CLASSIFICATION

	Global	National	Regional	SubNational	SubTotal
IC10	<1%	8.05%	<1%	1.09%	9.16%
IC20	<1%	1.23%	<1%	2.44%	3.67%
IC30	<1%	<1%	<1%	4.78%	5.65%
IC40	<1%	2.77%	2.34%	4.36%	9.78%
IC50	<1%	3.13%	<1%	2.73%	6.05%
IC60	3.14%	4.22%	3.57%	7.95%	18.89%
IC70	<1%	19.54%	<1%	7.00%	26.72%
IC80	<1%	11.81%	<1%	7.79%	20.08%
				Total	100%

National and Subnational assets contribute to higher total assets, suggesting strong investor interest in these exposures. Infrastructure investments are also predominantly focused on these regions, with a strong emphasis on Renewable Power and Network Utilities. Regional and Global projects are fewer and command lower total assets, which aligns with the higher complexity and risks associated with broader economic risks.

All in all, geoeconomic classification captures the degree of common economic exposure of different infrastructure companies by illustrating the vital risks a company possesses, as such, reinforces the relevant understanding of potential correlations between assets. This pillar aids the analysis of infrastructure companies by recognising and establishing the geoeconomic and geopolitical risks associated with an infrastructure company, and how these risks vary across different geographical regions.

Corporate Structure

Corporate Structure

FIGURE 30: CORPORATE GOVERNANCE BREAKDOWN BY COUNT AND BY TOTAL ASSETS

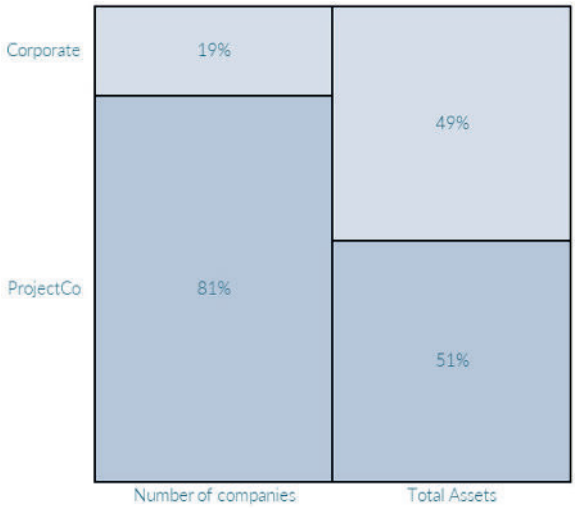
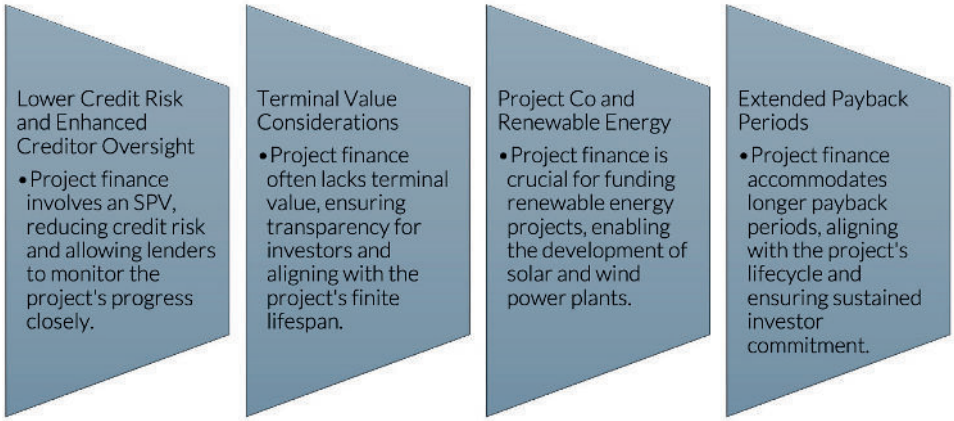


Figure 30 above compares the proportion of Corporate and ProjectCo companies in the universe. It reveals that Corporate entities constitute 19% of the total number of companies, yet they hold a substantial 49% of total assets. This indicates that Corporate entities are fewer but larger and more asset-heavy, reflecting significant investments and market control within this segment. In contrast, ProjectCo entities account for a dominant 81% of the total number of companies but manage only 51% of total assets. This suggests a highly fragmented sector with numerous smaller projects or companies, each contributing modestly to the overall asset pool. The stark difference between the number of companies and asset distribution between Corporate and ProjectCo categories highlights a dual market structure. Corporates represent concentrated, high-value investments, whereas ProjectCos indicate widespread, smaller-scale projects. This dynamic suggests that the infrastructure market in the universe is characterised by both significant large-scale investments and a broad base of smaller, more numerous entities driving diverse projects.

There are several reasons that project companies are more favourable:



Corporate Structure

FIGURE 31: CORPORATE STRUCTURE BREAKDOWN BY COUNT FOR EACH REGION

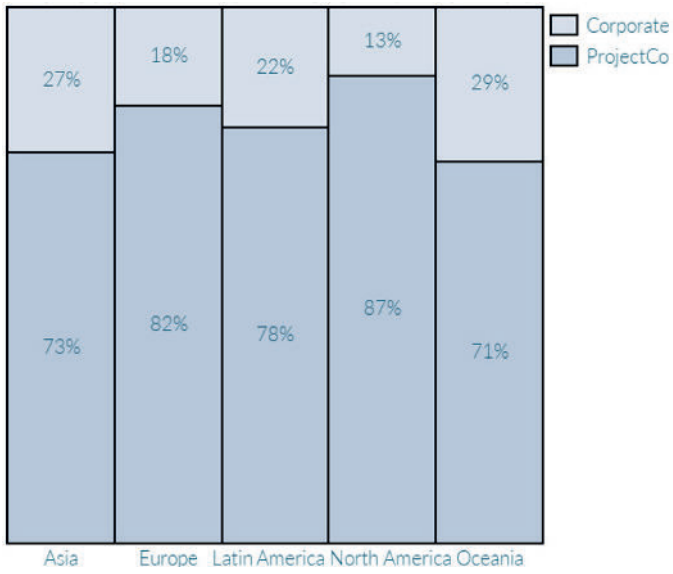


Figure 31 provides an insightful overview of the corporate structure distribution for unlisted infrastructure assets across five regions: Asia, Europe, Latin America, North America, and Oceania. The data is segmented into Corporate and ProjectCo categories, reflecting the number of companies operating within each region. ProjectCo companies consistently represent a larger share in all regions, indicating a significant focus on project-level investments. Specifically, North America exhibits the highest proportion of ProjectCo companies at 87%, followed by Europe at 82%, Latin America at 78%, Asia at 73%, and Oceania at 71%. Conversely, Corporate investments are more modest, with the number of companies ranging from 13% in North America to 29% in Oceania.

This distribution underscores a predominant preference for project-level investments over corporate-level allocations in the unlisted infrastructure sector globally. The higher number of ProjectCo companies suggests a strategic emphasis on direct project management and execution, which may offer more control and potentially higher returns on investment. This trend is especially evident in North America and Europe, where the disparity between ProjectCo and Corporate companies is most significant.

Understanding these regional differences is crucial for stakeholders aiming to optimise their investment strategies and achieve a balanced portfolio in the unlisted infrastructure market.

Corporate Structure

FIGURE 32: CORPORATE STRUCTURE BY COUNT, BY INDUSTRIAL CLASS

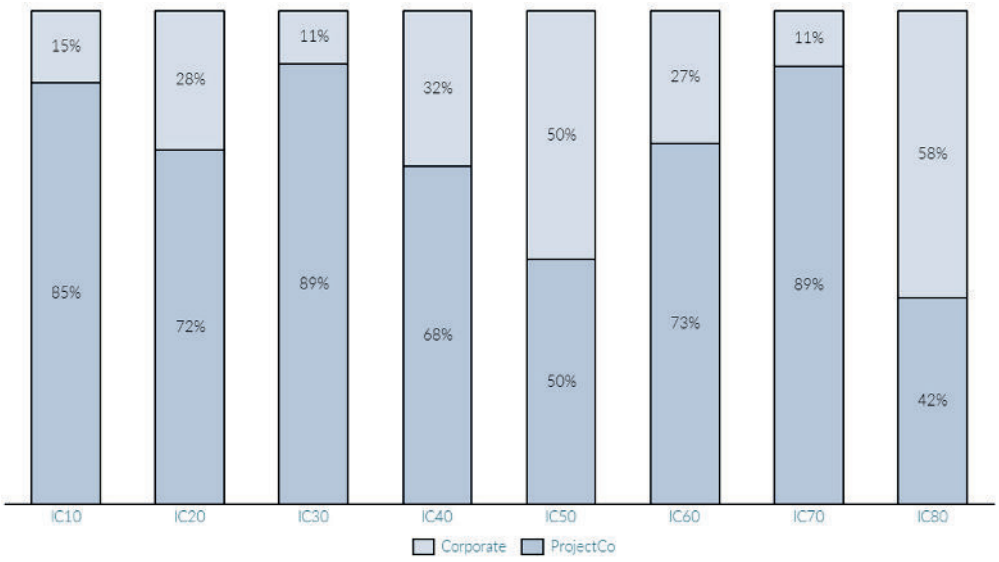


Figure 32 illustrates the corporate structure across various industrial classes. Notably, ProjectCo represents the majority share in six industrial classes, with the exception of IC80-Network Utilities. This is attributed to its ability to facilitate centralised management, enhance regulatory compliance, and provide access to diverse financing options. This structure also aids in risk pooling, achieving operational efficiencies, and maintaining strategic flexibility, which are essential for large-scale, complex operations such as electricity, water, and gas distribution networks.

An interesting aspect is the IC50-Data Infrastructure, where both Corporate and ProjectCo hold equal shares of 50%. This structure ensures a systematic approach to data collection, storage, and management, guaranteeing that information is readily available and secure. It supports informed decision-making by effectively organising and analysing data, which is crucial for both project-specific and strategic decisions. Additionally, efficient data infrastructure streamlines operations by automating processes and reducing manual tasks, leading to cost savings and improved productivity. It also ensures compliance with regulatory requirements and safeguards sensitive information against breaches. Modern data infrastructure offers scalability and flexibility, enabling organisations to adapt to changing needs and manage large volumes of data. Furthermore, it allows organisations to leverage advanced technologies such as AI and machine learning, driving innovation and maintaining a competitive edge. In summary, data infrastructure is the backbone that supports efficient data management, enhances decision-making, ensures compliance, and fosters innovation in both project-specific and corporate environments.

Corporate Structure

FIGURE 33: CORPORATE STRUCTURE BREAKDOWN BY TOTAL ASSETS FOR EACH REGION

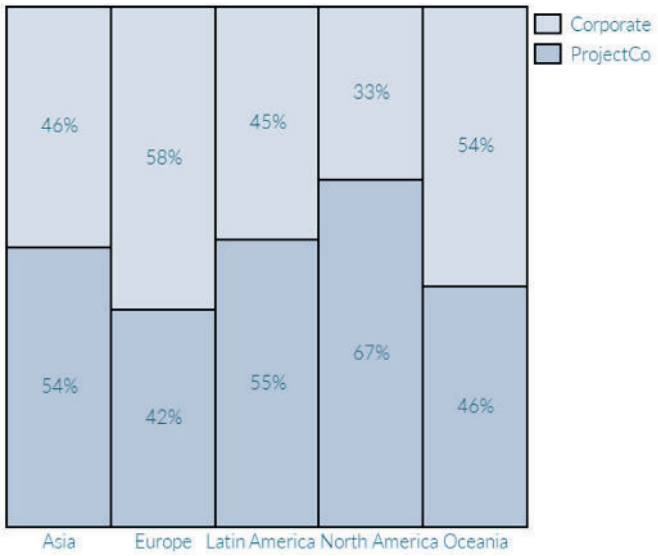


Figure 33 illustrates the distribution of total assets between Corporate and ProjectCo categories within the Asian infrastructure sector. ProjectCo companies hold 54% of the total assets, while Corporate companies control 46% of the assets. This data reflects the prevalence and favourability of ProjectCo companies in Asia due to various factors. Governments in the region have been implementing reforms and measures to attract both domestic and foreign investments, particularly in large-scale infrastructure projects. For instance, infrastructure projects in Malaysia have been pivotal in spurring economic activity, lifting the country out of recession, and enhancing employment and the standard of living. Additionally, regional connectivity projects, such as the RTS Link Project between Johor Bahru in Malaysia and Singapore, aim to improve transportation efficiency, serving about 10,000 passengers per hour each way by its completion in 2026 (The Straits Times, 2023). Such initiatives are designed to attract more investors and generate job opportunities, reinforcing the preference for project-based companies in Asia's infrastructure market. This emphasis on project companies highlights their role in driving economic growth and regional development through substantial infrastructure investments.

Within the European region, corporate companies hold a significant majority of the total assets, accounting for 58% of the assets. This is substantial, especially considering that project companies, which are more numerous, hold a smaller share of the total assets, accounting for 42% of the assets. This discrepancy can be attributed to various factors, such as corporate companies being older, more established, and operating in more capital-intensive sectors. In contrast, project companies, which are newer or operate in less capital-intensive sectors, have not amassed assets to the same extent. This highlights the significant role of corporate companies in asset ownership and underscores the potential for growth and investment in project companies. The distribution of assets in the European region is skewed towards corporate companies, contributing the largest by total asset value due to their greater access to capital

Corporate Structure

and resources, as well as their management of high-value sectors such as utilities, energy, and transportation.

In the Latin America region, corporate companies hold 45% of total assets, while project companies hold 55% of total assets. In Chile and Brazil, project companies often benefit from more favourable tax structures compared to larger corporate entities. Chile's tax frameworks encourage private sector investment in infrastructure through concessions and private equity-backed models, while Brazil offers tax incentives to stimulate infrastructure investments. These project companies are increasingly used to meet stringent ESG standards and comply with sustainability regulations. Local knowledge and partnerships are crucial for successful infrastructure projects in both countries, allowing for flexible structuring that facilitates local ownership, joint ventures, and adherence to domestic content rules. This flexibility is particularly useful for navigating local market complexities such as land acquisition, labour laws, and municipal regulations. Additionally, project companies in Chile and Brazil frequently access funding from multilateral development banks and institutions like the Inter-American Development Bank (IDB) and the World Bank.

In North America, corporate companies account for 33% of total assets, while project companies hold 67% of total assets. Whilst in the Oceania region, represented by Australia and New Zealand, these nations are significant players in the global infrastructure sector. The corporate governance breakdown of infrastructure companies in these countries reveals that total assets are more evenly distributed between corporate and project companies. Specifically, corporate companies account for 54% of total assets, while project companies account for 46% for both. Both countries have a robust infrastructure pipeline with numerous ongoing and planned projects.

Infra300®

Infra300®

Representing more than 25 of the largest economies, infraMetrics® offers extensive coverage and granularity for the private infrastructure market, with a market valuation of USD551.23bn, as of September 2024.

Geographic Coverage

FIGURE 34: INFRAMETRICS® COVERAGE BY COUNTRY AND REGION BY NUMBER OF ASSETS FOR BROAD MARKET UNIVERSE AND THE INFRA300 MARKET INDEX AS OF 30/9/2024

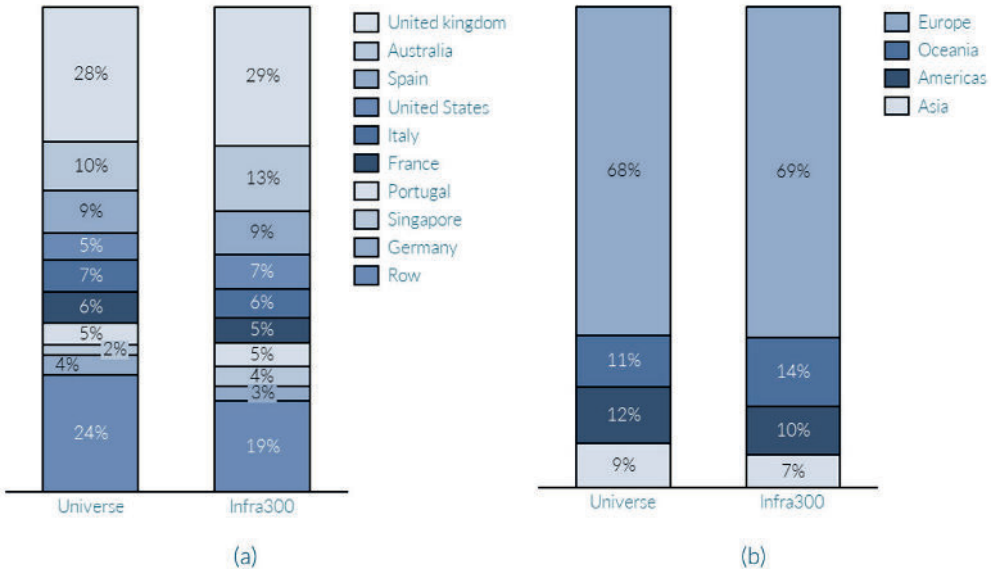


Figure 34 presents infraMetrics® coverage across countries and regions with a comparison to the broader infrastructure universe. The infra300 index is a global representation of 300 infrastructure equity investments, closely mirroring the broad market's geographic asset distribution. As shown in Figure 34a, both the broad market and the infra300 have the highest concentration in the UK, followed by Australia. Figure 34b highlights that Europe accounts for over 70% of the market, while Asia comprises around 10%

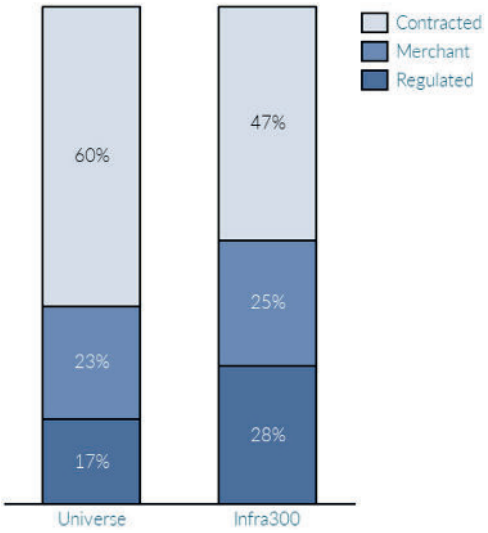
Coverage by TICCS® Pillars

The broad market universe is not designed to represent a specific underlying market. Rather, it acts as a foundation for creating more targeted datasets that accurately represent the private infrastructure market. The broad market universe provides a wide coverage of all the relevant TICCS® pillars:

Infra300®

Business-Risk Classification:

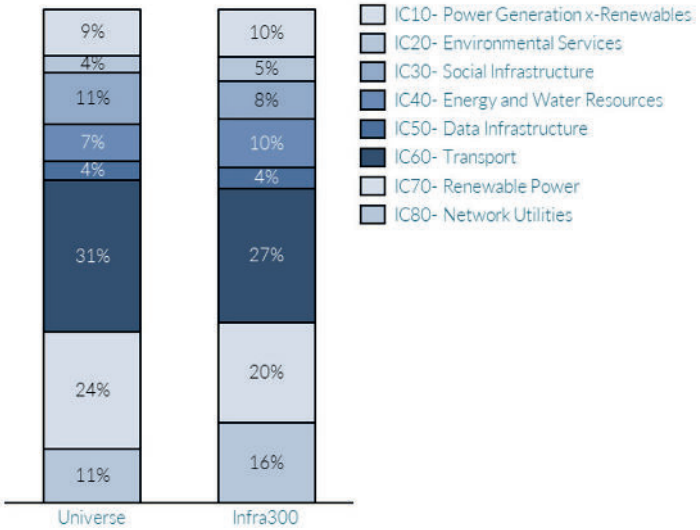
FIGURE 35: TICCS® BUSINESS-RISK CLASS COVERAGE BY NUMBER OF ASSETS FOR BROAD MARKET UNIVERSE AND THE INFRA300 MARKET INDEX AS OF 30/9/2024



Matching the broad market universe, the infra300 market index has a similar composition of the business-risk classes, by number of assets such that the contracted companies have the highest composition.

Coverage by Industrial Classification:

FIGURE 36: TICCS® INDUSTRIAL CLASS CLASSIFICATION COVERAGE BY NUMBER OF ASSETS FOR BROAD MARKET UNIVERSE AND THE INFRA300 MARKET INDEX AS OF 30/9/2024

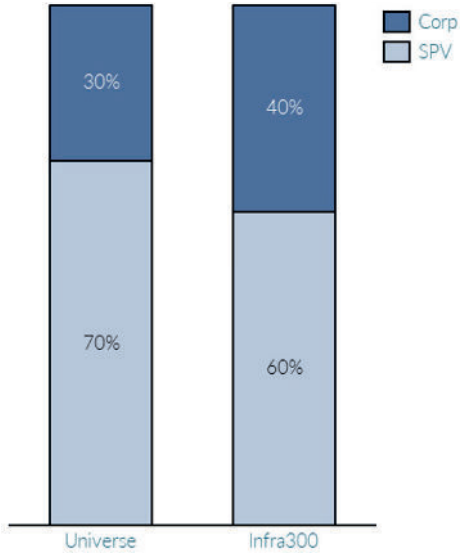


Aligning with the broad market universe by number of assets, the infra300 market index is composed similarly across industrial classifications, with the transport sector representing the largest share as illustrated in Figure 36.

Infra300®

Coverage by Corporate Structure:

FIGURE 37: TICCS® CORPORATE STRUCTURE COVERAGE BY NUMBER OF ASSETS FOR BROAD MARKET UNIVERSE AND THE INFRA300 MARKET INDEX AS OF 30/9/2024



In line with the broad market universe, the infra300 market index mirrors the composition of corporate structures by number of assets, with companies that have the corporate structure making up the largest share of the index, as demonstrated in Figure 37.

TABLE 4: AVERAGE DIFFERENCE BETWEEN MODEL PREDICTED AND OBSERVED TRANSACTION PRICE

TICCS Code	TICCS Name	Average Difference	Confidence Bounds	
			Lower	Higher
IC10	Power	-1.1%	-6%	1%
IC20	Env. Services	0.0%	-1%	1%
IC30	Social	-2.1%	-7%	4%
IC40	Nat. resources	-0.5%	-4%	1%
IC50	Data	0.6%	0%	2%
IC60	Transport	-0.2%	-3%	2%
IC70	Renewables	-0.1%	-2%	2%
IC80	Net. Utilities	-0.6%	-3%	1%

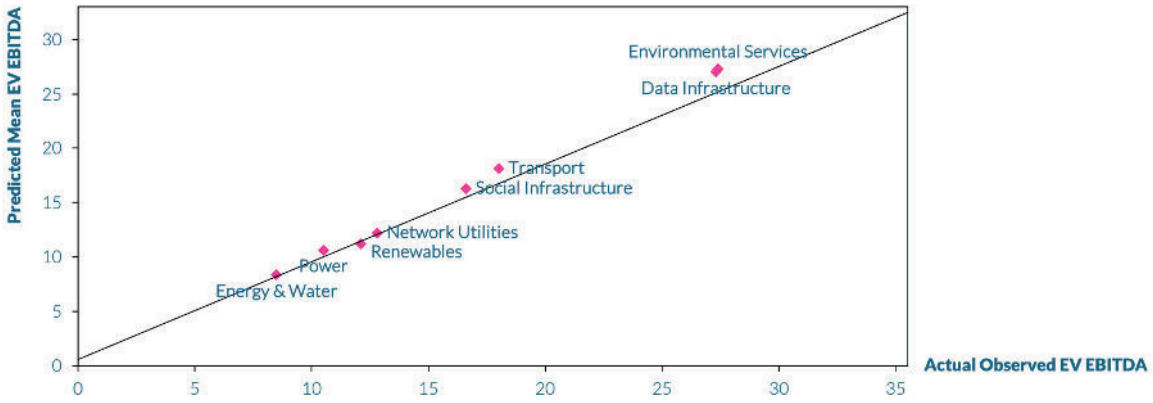
infraMetrics® data are robust, accurately capturing infrastructure market dynamics over time without bias or smoothing. The shadow prices generated by the infraMetrics® valuation model represent the average (or systematic) price of a company with similar characteristics at that point in time. On average, the predicted price and observed exit prices are very close within each TICCS® segment. As shown in table 5, our model predicted prices are accurate and the prediction error is typically within 5% of observed prices.

Infra300®

TABLE 5: ESTIMATED VS. REPORTED VALUATION RATIOS AND MODEL GOODNESS OF FIT

Ratio	Reported Mean	Estimated Mean	Reported Median	Estimated Median	R2
EV / EBITDA	15.54	15.34	12.98	12.61	97%
Price / Book	2.37	2.28	1.65	1.59	87%
Price / Sales	3.35	3.21	2.52	2.32	85%

FIGURE 38: EV/EBITDA INFRAMETRICS® MODEL ESTIMATED VS ACTUAL DEAL VALUES



Similarly, Table 5 and Figure 38 illustrate that our estimated transaction values are very close to the actual transacted deal values. Accurate valuations suggest that infraMetrics® indices and benchmarks genuinely reflect the risk level of the private infrastructure investment asset class, capturing the market's risk profile as of the model calibration date.

Listed Infrastructure

Listed Infrastructure

FIGURE 39: TREND OF UNLISTED INFRASTRUCTURE TOTAL ASSETS FROM 2017 TO 2021

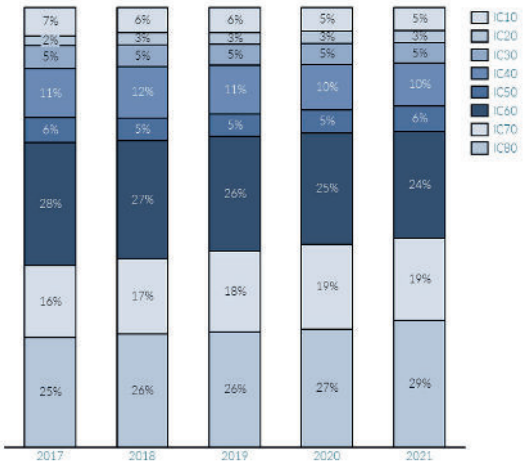
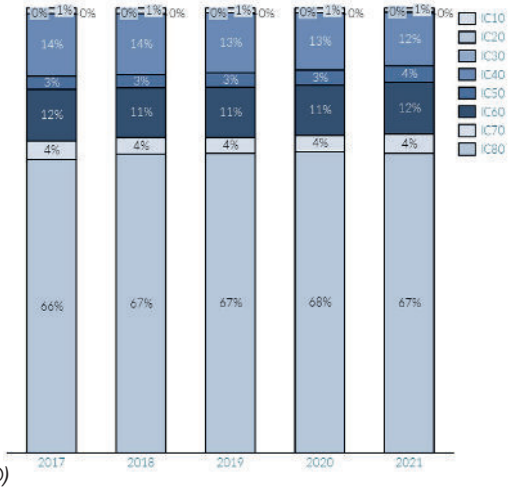


FIGURE 40: TREND OF LISTED INFRASTRUCTURE TOTAL ASSETS FROM 2017 TO 2021



Source: 151 listed entities (inframetrics®)

Turning now to listed infrastructure tracked by Scientific Infra, as presented in Figure 40 (Listed), IC80-Network Utilities, IC60-Transport and IC40-Energy and Water Resources hold the larger proportional than the remaining industrial classes. There are a few reasons why these industries are more appealing to listed companies.

Firstly, these industries are capital-intensive, necessitating substantial investment for the development and upkeep of infrastructure. Going public enables these companies to amass significant capital from a diverse range of investors. Secondly, these industries typically generate steady and predictable cash flows, which are enticing to investors. For instance, toll roads, airports, and utilities often have long-term contracts or regulated pricing, offering a clear outlook on future revenues. The stability of these cash flows draws more investors, indirectly boosting the demand for these industries. This increased demand can motivate more companies within these industries to go public.

Listed Infrastructure

In contrast, IC30-Social Infrastructure and IC20-Environmental Services represent a small proportion of listed companies. As these assets are relatively much smaller in size, compared to other sectors and they do not generate the highest return. Social infrastructure (e.g., hospitals, schools, public housing) and environmental services (e.g., waste management, water treatment) are often funded or subsidised by governments, and their returns can be lower compared to other infrastructure projects like energy or transportation. As investors generally seek sectors where the return on investment is higher or more predictable, the social and environmental services sectors are not as appealing to them as others.

FIGURE 41: TREND OF TOTAL ASSETS OF UNLISTED INFRASTRUCTURE BY REGION FROM 2017 TO 2021

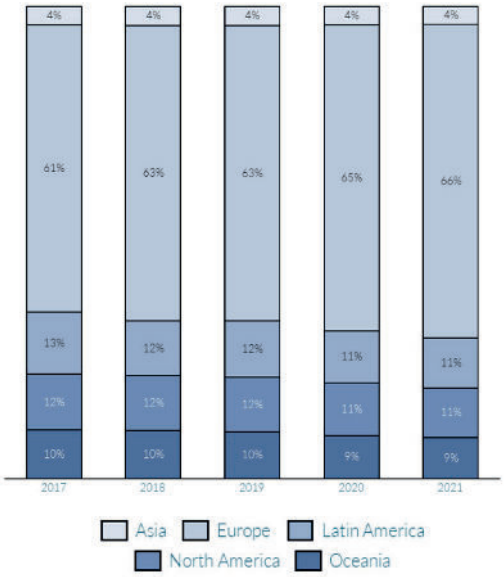
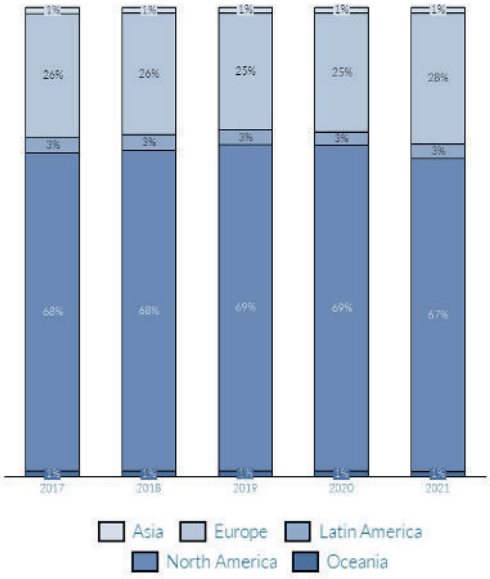


FIGURE 42: TREND OF TOTAL ASSETS OF LISTED INFRASTRUCTURE BY REGION FROM 2017 TO 2021



Listed Infrastructure

Figure 41 and Figure 42 depict the trends in total assets of infrastructure investments by region from 2017 to 2021. The left chart represents unlisted infrastructure, while the right chart focuses on listed infrastructure. A notable distinction between the two is the regional distribution of assets. In the unlisted infrastructure category, Europe consistently holds the largest share, increasing from 61% in 2017 to 66% in 2021. North America follows as the second-largest region, though its share remains significantly smaller at approximately 12% to 13% over the period. Asia and Latin America account for moderate portions, while Oceania consistently holds a minor 4% share.

Conversely, Figures 41 and 42 highlight that North America possesses the most listed infrastructure maintaining a substantial 68% to 69% share throughout the period of analysis. Europe has a notably smaller share of listed assets contributing between 25% and 28%. Whilst Asia's share in listed infrastructure is minimal, hovering at just 1%, alongside Latin America and Oceania, which hold similarly small portions.

Over time, the unlisted infrastructure market shows a gradual increase in Europe's share, while North America's portion slightly declines. Listed infrastructure, however, remains relatively stable, with North America's dominance persisting and Europe's share seeing modest growth. This indicates that unlisted infrastructure investments are more heavily concentrated in Europe, while listed infrastructure investments are significantly skewed towards North America, suggesting stronger public market activity in the region. Despite slight shifts in allocation, the overall distribution patterns indicate consistent investment behaviour across both categories, with Europe driving unlisted growth and North America maintaining leadership in listed assets.

FIGURE 43: REVENUE GROWTH BY MEAN FOR LISTED INFRA VS INFRA300®

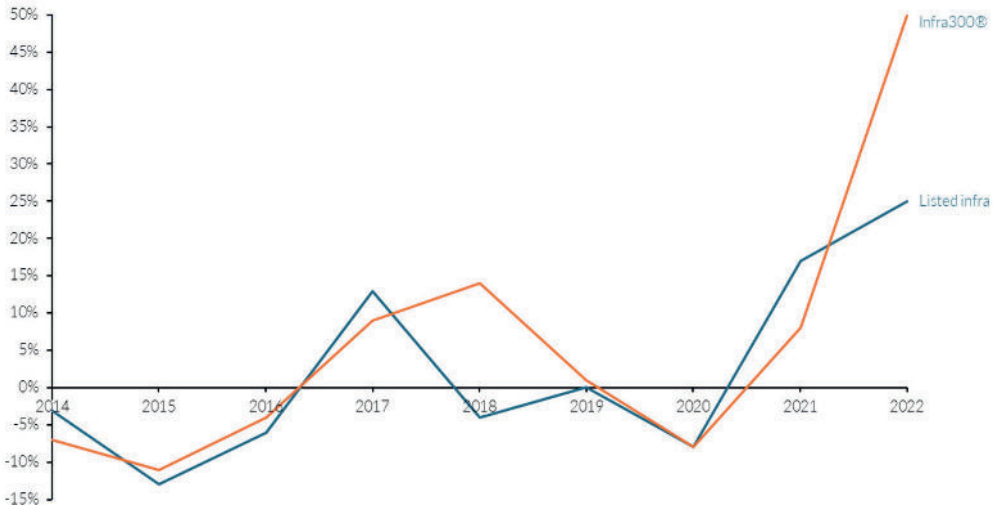


Figure 43 shows the listed infrastructure companies and Infra300® companies reveal distinct trends in their trajectories over the observed period. Listed infrastructure showed a steady decline beginning in 2017, culminating in their lowest revenue performance level by 2020.

Listed Infrastructure

This gradual but sustained downturn underscores their vulnerability to prolonged economic or sector-specific challenges, potentially including tightening financial conditions.

Infra300®, on the other hand, displayed greater initial resilience, maintaining a relatively stable revenue performance trajectory until 2018. However, their revenue performance subsequently deteriorated more sharply, reaching the same low point as listed infrastructure by 2020. This accelerated decline over a shorter time frame may indicate a delayed but rapid sensitivity to broader market or economic pressures, possibly influenced by factors such as reduced capital inflows, market corrections, and broader macroeconomic disruptions.

Figure 43 highlights a notable divergence in their paths from 2017 to 2018, followed by a convergence at the same low point in 2020. This convergence suggests that despite differing timelines and levels of resilience, both groups ultimately faced similar challenges or headwinds by the end of the period. Potential contributing factors could include the global economic slowdown, shifts in investor preferences, and external shocks, such as the COVID-19 pandemic, which disrupted markets globally in 2020.

From 2020 onward, both groups demonstrate a sharp recovery, with listed infrastructure exhibiting a steeper rebound compared to Infra300® companies. This divergence in recovery rates may point to differences in their difference in industry mix, with the listed universe mainly vertically integrated utilities with an energy focus. In contrast, Infra300® companies, while also recovering, appear to do so at a more measured pace, which could reflect a more gradual restoration of confidence or underlying structural constraints.

Overall, this analysis underscores the varying resilience, adaptability, and sensitivities of listed infrastructure and Infra300® companies to economic and market dynamics over the observed period, while highlighting broader systemic challenges that impacted both groups similarly during the downturn in 2020.

TABLE 6: PERFORMANCE AND VOLATILITY – TOTAL RETURN FOR INFRA300® AND LISTED INFRA

Index	Returns %					Annualised Returns		Volatility %		
	1 M	3 M	6M	YTD	1 YR	3 YR	5YR	3YR	5YR	10YR
Infra300®	0.48	-1.63	6.28	4.23	14.22	8.74	6.51	19.01	16.78	15.77
Listed infra	-4.68	-3.5	5.74	9.62	9.78	4.03	4.29	27.10	28.83	25.54

The performance overview underscores the divergent trends between the Infra300® index and the Listed index across various time horizons. In the short term (1 to 3 months), Infra300® outperforms Listed, achieving a modest 0.48% return over the past month compared to a significant -4.68% decline for the Listed index. However, over the 3-month period, Infra300® exhibits a slight negative performance of -1.63%, yet still surpasses Listed infra -3.5%. This indicates greater resilience in Infra300® during market corrections.

Listed Infrastructure

In the medium- to long-term, the performance gap narrows. Over the past 6 months, both indices show positive returns, with Infra300® at 6.28% and Listed closely following at 5.74%. Year-to-date (YTD) returns reveal a stronger performance by Listed at 9.62%, while Infra300® trails at 4.23%. Nevertheless, on a 1-year basis, Infra300® demonstrates a superior return of 14.22%, surpassing Listed infra 9.78%. Over the longer 3- and 5-year horizons, Infra300® consistently outpaces Listed, delivering annualised returns of 8.74% and 6.51% respectively, compared to 4.03% and 4.29% for Listed.

Volatility analysis further explains the risk-return dynamics. The Listed index exhibits significantly higher volatility across all measured periods, with a 3-year volatility of 27.10%, compared to 19.01% for Infra300®. This pattern persists over 5- and 10-year periods, where listed infra volatility stands at 28.83% and 25.54%, whereas Infra300® maintains lower volatility at 16.78% and 15.77%. This suggests that Infra300® offers more stable returns, aligning with the characteristics of infrastructure assets known for their defensive nature.

Key insights reveal that Infra300® outperforms Listed in shorter time frames, indicating stability during volatile periods. Infra300® consistently delivers higher long-term returns with lower volatility, reinforcing its appeal to risk-averse investors. Conversely, the Listed index's greater fluctuations suggest higher sensitivity to market conditions, potentially offering higher rewards but at the cost of increased risk. Overall, Infra300® presents itself as a more stable investment vehicle with consistent performance, while the Listed index may appeal to investors seeking higher potential returns despite elevated volatility.

Appendix

Appendix

The countries in the universe can be divided by region as shown in the table below:

TABLE 7: COUNTRIES IN THE UNIVERSE

Regions	Countries
Asia	Malaysia, Singapore, Philippines
Europe	Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, United Kingdom
Oceania	Australia, New Zealand
Latin America	Brazil, Chile
North America	Canada, United States

Our universe is a collection of all privately held infrastructure assets in companies that meet the inclusion criteria of size, market activity and financial information. The table below explains the rationale for selecting the countries in the universe.

TABLE 8: CRITERIA ON COUNTRIES SELECTION

Criteria	Minimum Threshold (On Measurement Date)	
Size	Cumulative primary and secondary deal flow since 2000 represents at least 0.5% of the total value of all identified markets AND	
Market Activity	Market turnover ratio	at least 20% by number of transactions OR
		at least 20% by transaction volume OR
		the country is part of the European Union**
Financial Information	Availability of basic procurement and financial information including incorporation and financial close dates, book values, etc.	

TABLE 9: MARKET CAPITALISATION ENTERPRISE VALUE AND DEBT VALUE ESTIMATES

Country	Market Capitalisation in Billion	Enterprise Value in Billion	Debt Value in Billion
AUT	6.69	12.07	5.38
NOR	9.42	14.79	5.36
NZL	10.41	18.88	8.47
SVK	12.07	22.40	10.33
IRL	13.52	28.94	15.42
FIN	13.94	34.31	20.37
SGP	15.12	26.31	11.19
POL	16.93	29.62	12.70
SWE	18.72	32.05	13.32
DNK	23.60	37.44	13.83
PRT	23.75	43.02	19.27
PHL	27.38	50.03	22.65
NLD	38.08	73.23	35.15
MYS	47.67	86.93	39.26
CAN	79.57	152.71	73.14
CHL	86.27	155.53	69.26
DEU	100.35	187.89	87.54
FRA	133.14	243.86	110.72

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ITA	139.51	254.66	115.15
ESP	162.40	301.47	139.07
AUS	207.16	365.84	158.68
BRA	282.09	524.24	242.15
GBR	336.13	703.62	367.50
USA	440.18	835.12	394.93
Total	2244.09	4234.95	1990.86

Methodology for Calculating Market Capitalisation and Enterprise Value

Our methodology utilises total asset (TA) data to estimate both Enterprise Value (EV) and Equity Market Capitalisation for the firms in the infrastructure universe. This approach is applied to provide a comprehensive assessment of the infrastructure market landscape.

Step 1: Total Asset Data and Estimation

For companies with missing total asset data, an estimate of the average TA values based on several key factors, including:

- Industry Classification (TICCS)
- Business Model (Contracted, Merchant, etc.)
- Corporate Structure (Corporate vs. ProjectCo)
- Country-Specific Data (Country risk, geoeconomics, etc.)

Weighted averages are computed for each country, industry segment, and company type, allow an estimated TA to be assigned to firms without full data coverage.

Step 2: Financial Ratios – EV2TA and EQ2TA

We calculate two financial ratios:

- EV2TA (Enterprise Value to Total Assets): Used to estimate the enterprise value of firms.
- EQ2TA (Equity Value to Total Assets): Used to estimate the equity market capitalisation.

These ratios are derived using regression models that incorporate variables such as:

- Company size (log of TA)
- Country risk (based on term spreads)
- Age of the company
- Interaction between industry classification and business model
- Corporate governance and geoeconomics factors

Step 3: Estimation of Enterprise Value and Market Capitalisation

Once the EV2TA and EQ2TA ratios are calculated, the total asset values of each firm will be applied to estimate:

- Enterprise Value (EV): The overall market value of the firm, including debt.
- Equity Market Capitalisation: The market value of the company's equity.

Step 4: Leverage Calculation

Leverage is calculated to adjust the estimates based on the company's debt level, using the formula:

- Debt = Enterprise Value - Equity Market Value
- Leverage Ratio = Debt / Total Assets

Appendix

TABLE 10: TICCS BUSINESS-RISKS CLASSIFICATION

Business Risk Classes	Business Risk Subclasses	
BR1 - Contracted: Contracted infrastructure firms enter into long-term contracts to pre-sell all or most of their output at a pre-agreed price. All or the majority of market risk (price and/or demand) is transferred to a third party. The contract is for a significant period of the investment's life, typically one or several decades.	BR10 - Fully contracted income: Fully contracted infrastructure firms enter into a long-term contract by which they will provide a service or product corresponding to the entirety of their activity. Hence, they do not engage in any other activity during the life of the contract.	- Availability-based infrastructure or project - Take-or-pay off-take agreement - Capacity agreements - Tolling agreements - Large-scale generation certificates (LGCs) and small-scale technology certificates (STCs)
BR1 - Contracted: Contracted infrastructure firms enter into long-term contracts to pre-sell all or most of their output at a pre-agreed price. All or the majority of market risk (price and/or demand) is transferred to a third party. The contract is for a significant period of the investment's life, typically one or several decades.	BR11 - Partially contracted income: Partially contracted infrastructure firms commit to delivering a certain level of service or output below their full capacity level.	- Shadow tolling arrangements - Partial capacity agreements - Partial power purchase agreements - Feed-in tariff
BR2 - Merchant: Merchant infrastructure firms are mostly or fully exposed to market risk (price and demand risk).	BR20 - Variable income: Merchant infrastructure firms collect fees and tariffs from end users as a function of the effective demand for service.	- Real toll roads - Merchant power plants
BR3 - Regulated: The regulator can set allowable limits on tariffs, rate of returns, or revenues. Also referred to as discretionary regulation.	BR30 - Rate-of-return regulation: The regulator is expected to set tariffs high enough to cover the costs of an efficient firm, including operating-expense depreciation and a reasonable return on invested capital.	- Cost-of-service regulation - Commission regulation
BR3 - Regulated: The regulator can set allowable limits on tariffs, rate of returns, or revenues. Also referred to as discretionary regulation.	BR31 - Price-cap regulation: The regulator sets a multiyear price cap typically defined in terms of the rate of inflation minus an expected rate of productivity improvement. Firms can increase their profits by cutting costs between regulatory reviews, thus creating incentives for efficiency gains.	- Incentive regulation

TABLE 11: TICCS INDUSTRIAL CLASSIFICATION

Group Code	Group Name	Sector Code	Sector Name	Asset Code	Asset Name
IC10	Power Generation x-Renewables	IC1010	Independent Power Producers	IC101010	Nuclear Power Generation
				IC101020	Gas-Fired Power Generation
				IC101030	Coal-Fired Power Generation
				IC101040	Combined Heat and Power Generation
				IC101050	Other Fossil-Fuel-Fired Power Generation
IC10	Power Generation x-Renewables	IC1020	Independent Water and Power Producers	IC102010	Power and Water Production
IC20	Environmental Services	IC2010	Waste Treatment	IC201010	Non-Hazardous Waste Treatment
				IC201020	Hazardous Waste Treatment
				IC201030	Waste-to-Power Generation
				IC201040	Waste incineration
				IC201050	Gaseous Waste Treatment
IC20	Environmental Services	IC2020	Water Supply and Treatment	IC202010	Potable Water Treatment
				IC202020	Industrial Water Treatment
				IC202030	Sea Water Desalination
				IC202040	Water Supply Dams

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IC20	Environmental Services	IC2030	Wastewater Treatment	IC203010	Residential Wastewater Treatment and Reuse
				IC203020	Industrial Wastewater Treatment and Reuse
IC20	Environmental Services	IC2040	Environmental Management	IC204010	Flood Control
				IC204020	Coastal and Riverine Locks
				IC204030	Energy Efficiency
				IC204040	Carbon Capture
IC30	Social Infrastructure	IC3010	Defence Services	IC301010	Strategic Transport and Refuelling
				IC301020	Training Facilities
				IC301030	Barracks and Accommodation
IC30	Social Infrastructure	IC3020	Education Services	IC302010	Schools (Classes and Sports Facilities)
				IC302020	Universities (Classes, Labs, Administration Buildings)
				IC302030	Student Accommodation
IC30	Social Infrastructure	IC3030	Government Services	IC303010	Police Stations and Facilities
				IC303020	Courts of Justice
				IC303030	Prisons
				IC303040	Street Lighting
				IC303050	Social Accommodation
				IC303060	Government Buildings and Office Accommodation
IC30	Social Infrastructure	IC3040	Health and Social Care Services	IC304010	Hospitals
				IC304020	Clinics
				IC304030	Residential and Assisted Living
				IC304040	Crematorium
IC30	Social Infrastructure	IC3050	Recreational Facilities	IC305010	Stadiums and Sports Centres
				IC305020	Public Parks and Gardens
				IC305030	Convention and Exhibition Centres
				IC305040	Arts, Libraries, and Museums
IC40	Energy and Water Resources	IC4010	Natural Resources Transportation Companies	IC401010	Gas Pipeline
				IC401020	Oil Pipeline
				IC401030	Water Pipeline
				IC401040	Wastewater Pipeline
				IC401050	LNG Ships
IC40	Energy and Water Resources	IC4020	Energy Resource Processing Companies	IC402010	Liquefied Natural Gas - Liquefaction
				IC402020	Liquefied Natural Gas - Regasification
				IC402030	Crude Oil Refinery
				IC402040	Bioethanol Fuel
IC40	Energy and Water Resources	IC4030	Energy Resource Storage Companies	IC403010	Gas Storage
				IC403020	Liquid Storage
				IC403030	Other Storage
				IC403040	Floating Storage Units - FSU
IC50	Data Infrastructure	IC5010	Data Transmission	IC501010	Cell towers
				IC501020	Long-Distance Cables
				IC501030	Communication Satellites
				IC501040	Radio and media towers

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IC50	Data Infrastructure	IC5020	Data Storage	IC502010	Data Centres
IC60	Transport	IC6010	Airport Companies	IC601010	Airport
IC60	Transport	IC6020	Car Park Companies	IC602010	Car Park
IC60	Transport	IC6030	Port Companies	IC603010	Tool Port
				IC603020	Bulk Goods Port
				IC603030	Container Port
				IC603040	Other Port
IC60	Transport	IC6040	Rail Companies	IC604010	Heavy Rail Lines
				IC604020	High Speed Rail Lines
				IC604030	Freight Rail Rolling Stock
				IC604040	Passenger Rail Rolling Stock
IC60	Transport	IC6050	Road Companies	IC605010	Motorways
				IC605020	Motorway Network
				IC605030	Dual-Carriage way roads
				IC605040	Stand-Alone Tunnels
				IC605050	Stand-Alone Bridges
IC60	Transport	IC6060	Urban Commuter Companies	IC606010	Urban Light-Rail
				IC606020	Underground Mass Transit
				IC606030	Overground Mass Transit
				IC606040	Bus Transportation
IC70	Renewable Power	IC7010	Wind Power Generation	IC701010	On-Shore Wind Power Generation
				IC701020	Off-Shore Wind Power Generation
IC70	Renewable Power	IC7020	Solar Power Generation	IC702010	Photovoltaic Power Generation
				IC702020	Thermal Solar Power
IC70	Renewable Power	IC7030	Hydroelectric Power Generation	IC703010	Hydroelectric Dam Power Generation
				IC703020	Hydroelectric Run-of-River Power
				IC703030	Pumped Hydroelectric storage
IC70	Renewable Power	IC7040	Other Renewable Power Generation	IC704010	Biomass Power Generation
				IC704020	Geothermal Power Generation
				IC704030	Wave Power Generation
IC70	Renewable Power	IC7050	Other Renewable Technologies	IC705010	Battery storage
				IC705020	Off-Shore Transmission (OFTO)
				IC705030	Thermal storage
IC70	Renewable Power	IC7060	Hydrogen power generation	IC706010	Hydrogen-fired power generation
				IC706020	Hydrogen fuel cells
				IC706030	Hydrogen storage
IC80	Network Utilities	IC8010	Electricity Distribution Companies	IC801010	Electricity Distribution Network
IC80	Network Utilities	IC8020	Electricity Transmission Companies	IC802010	Electricity Transmission Network
IC80	Network Utilities	IC8030	District Cooling/Heating Companies	IC803010	District Cooling/Heating Network
IC80	Network Utilities	IC8040	Water and Sewerage Companies	IC804010	Water and Sewerage Network
IC80	Network Utilities	IC8050	Gas Distribution Companies	IC805010	Gas Distribution Network
IC80	Network Utilities	IC8060	Data Distribution Companies	IC806010	Data Distribution Network
IC80	Network Utilities	IC8070	Smart metering Companies	IC807010	Smart metering network

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TABLE 12: TICCS GEOECONOMIC CLASSIFICATION

Geoeconomic Classes	Definition	Examples
GE1 - Global infrastructure companies	The relevant infrastructure is exposed to global economic factors, e.g., international airports, oil and gas pipelines, some ports, etc.	Major transportation hubs, projects exposed to global commodity prices.
GE2 - Regional infrastructure companies	The relevant infrastructure is exposed to a group of national economies, e.g., energy transmission between two or more countries, airports serving regional routes. A regional regulator or legal framework may also exist such as the European Union.	Medium-size container ports, transborder projects like transmission lines or certain road corridors.
GE3 - National infrastructure companies	The relevant infrastructure is exposed to the national economy, e.g., domestic airports and national electricity transmission assets, and is relevant to the national government or a national regulator.	Large-scale road or telecommunication networks, companies regulated by a national-level entity.
GE4 - Subnational infrastructure companies	The relevant infrastructure serves the local economy, e.g., schools and hospitals, and has subsovereign public clients or counterparts.	Municipal or other subsovereign-entity social infrastructure projects.

TABLE 13: TICCS CORPORATE-STRUCTURE CLASSIFICATION

Corporate-Structure Classes	Corporate-Structure Subclasses	
CS1 - Infrastructure project companies: Companies according to the Basel-II definition of project finance created for the sole purpose of building and operating a well-defined tangible infrastructure asset limited in time and space.	CS10 - With creditor oversight project companies: Infrastructure project companies with presence of external senior debt	- Special-purpose vehicle - Special-purpose entity - Single-project company"
	CS11 - Without creditor oversight project companies: Infrastructure project companies without presence of external senior debt.	
CS2 - Infrastructure corporates		- Multiproject company

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