Infrastructure Quarterly: Q2 2023

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Macroeconomic overview

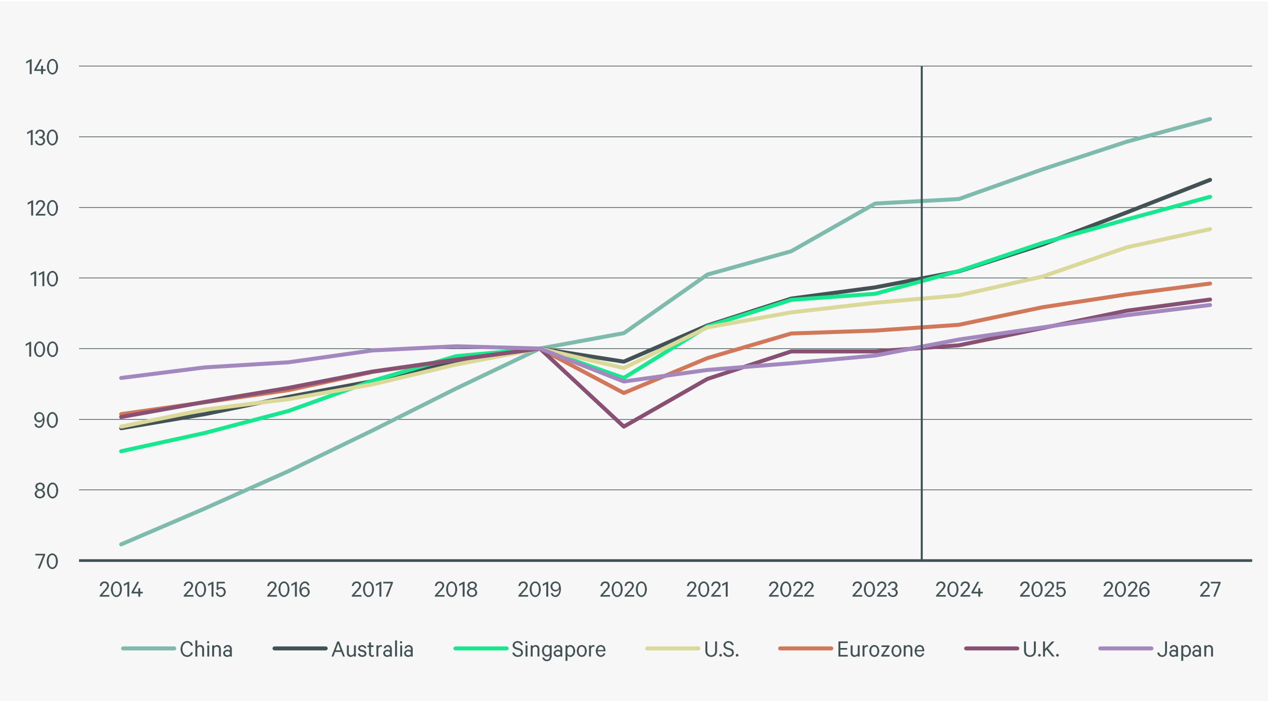
Growth across advanced economies eluded predictions of a sharp recession in the first half of 2023. However, the momentum of continued spending—driven by wage growth, tight labor markets and savings buffers—faces sticky core inflation and tightening credit conditions.

The balance between disinflation and financial stability will determine the speed and extent to which central banks will move base rates. Target terminal rates in the U.S. now lie in the range of 5% to 5.25%, while core inflation in the Eurozone remained stubbornly high, at 5.3% in May. We have a weaker near-term outlook for the U.S. and softer growth forecasts for Australia and Japan, given the more muted-than-expected China reopening. The U.K. and Japan have only just returned to pre-pandemic GDP levels (**Figure 1**).

The key risk for infrastructure investors remains the impact of steep changes in interest rates on asset valuations. Asset values were resilient in 2022, with the MSCI Private Infrastructure index recording capital growth of 5.5% and continuing strong income yield. Q1 2023 data from EDHECinfra further reflects an increase in net asset values (NAV) over the past year, as declining equity risk premiums and higher dividend forecasts offset the impact of rising interest rates.

The ability to pass through inflation, combined with structural earnings growth, has upheld infrastructure asset values relative to other alternative assets.

Figure 1: GDP level, rebased to 100 in 2019



Source: Oxford Economic Forecasting & CBRE Investment Management.

Commodities

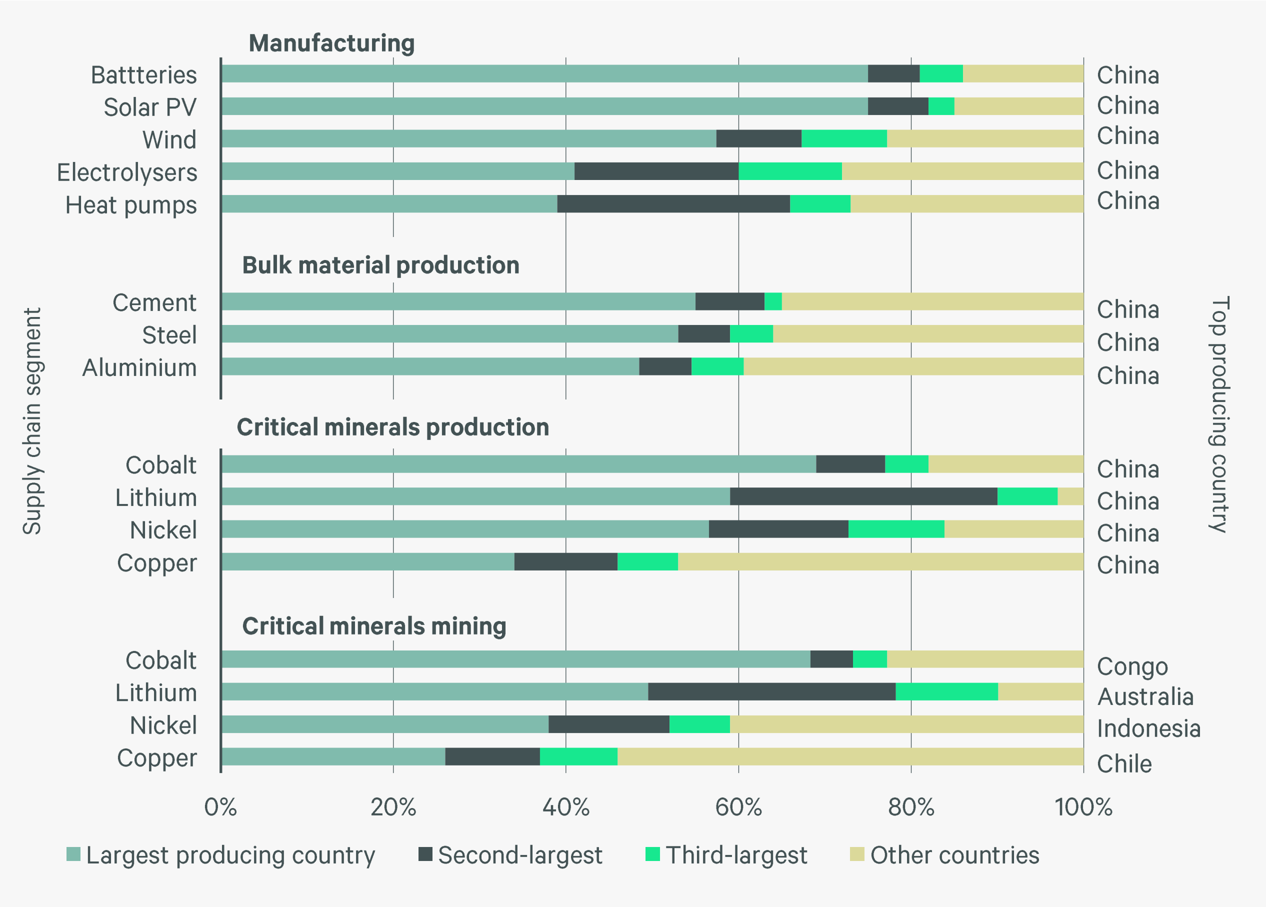
Softer global growth remains the central theme in commodity markets in 2023. Natural gas, oil and copper saw temporary price spikes in January to March, before retreating on recessionary demand concerns.

The overall picture for European natural gas in storage remains healthy. A mild winter and targets to end reliance on Russian fuel caused EU consumption to fall 17.7% from August 2022 to March 2023 compared to the average consumption over the past five years (Eurostat). High storage levels and lackluster demand from China is placing downward pressure on prices and will likely limit the seasonal winter upswing. U.S. natural gas prices have mirrored Europe's descent, creating more cushion in customer bills and helping to alleviate some affordability concerns for utilities looking to recover costs.

Supply disruptions in Chilean and Peruvian copper mines led to a climb in aggregate base metal prices in Q1, though robust mining outlooks and demand weakness in China should drag on prices as the year progresses. Critical inputs to renewables projects, base metal price depression should lower construction costs for greenfield renewable development and spur the electrification of transport and deployment of new data centers.

Current clean tech manufacturing is dominated by China (**Figure 2**). Announced capacity expansion points to a continuation of this concentration, despite policy action in the U.S. and Europe. To 2030, China accounts for 80% of announced production capacity for copper, as well as the bulk of refining capacity for key materials used in batteries (95% for cobalt and near 60% for both lithium and nickel)—more protective policy is likely on the horizon.

Figure 2: Geographic concentration by supply chain segment and leading producers, 2021



Source: International Energy Agency (IEA), Energy Technology Perspectives 2023 (January 2023).

Q1 fundraising slows

Fundraising is facing a challenging environment as inflation and interest rates near their peaks for the current economic cycle. Just $5 billion of closed-end capital was raised in Q1 2023, a 95% drop from Q1 2022.

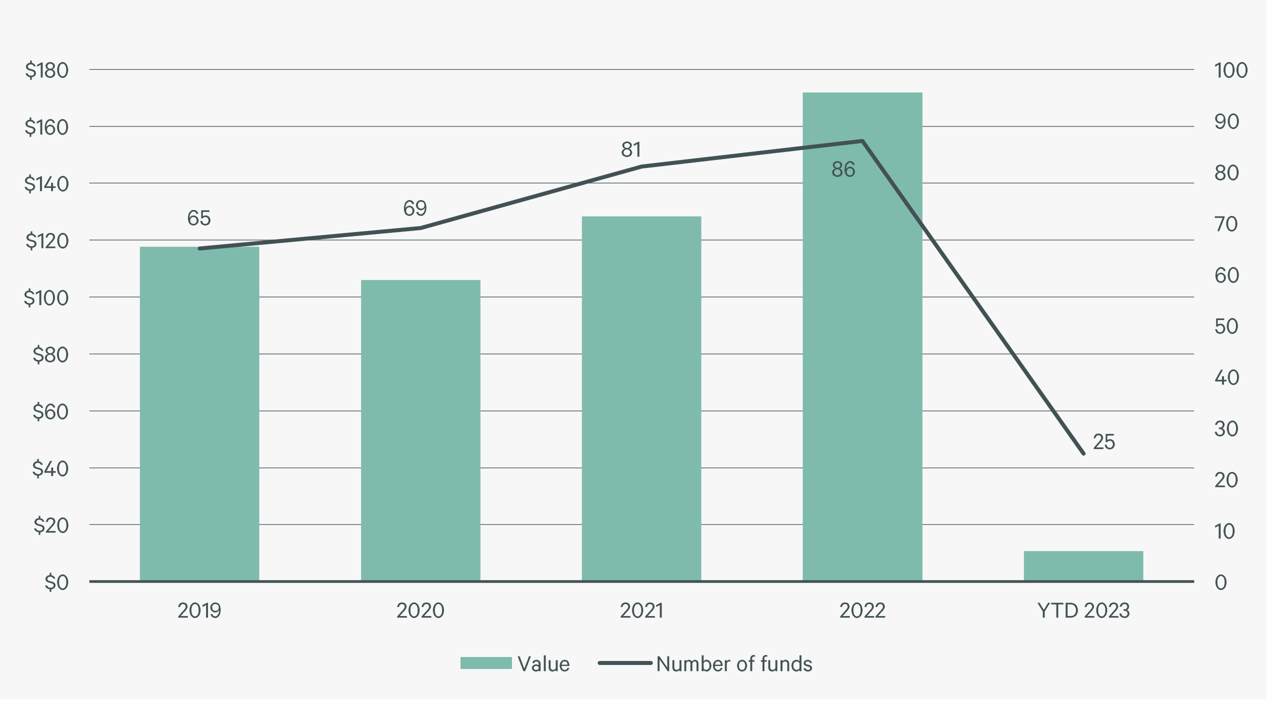
That said, context is king: widespread delays due to allocational limitations from the denominator effect, along with heightened selectivity due to broad economic uncertainty point to a rebound in the coming quarters. Institutional investors are maintaining their targets to infrastructure due to its downside resilience and inflation protection.

The fundraising outlook is still positive. The 10 largest funds in the market are seeking $130 billion, 76% of the total capital raised last year. Several managers have raised significant portions of various large and mid-market vehicles to close later in the year, which should boost fundraising figures.

The secondary market is another potential catalyst. Secondary transactions are expected to accelerate this year, replicating trends in real estate and private equity. Interest rate hikes should prompt investors to rotate out of global core funds into more specialized and opportunistic strategies, such as core-plus and energy transition funds.

> Fundraising pressures are chiefly technical and temporary; the outlook is positive as most investors have a long-term view of infrastructure.

Figure 3: Year-over-year infrastructure fundraising ($ billions)



Source: Infralogic as of June 8, 2023.

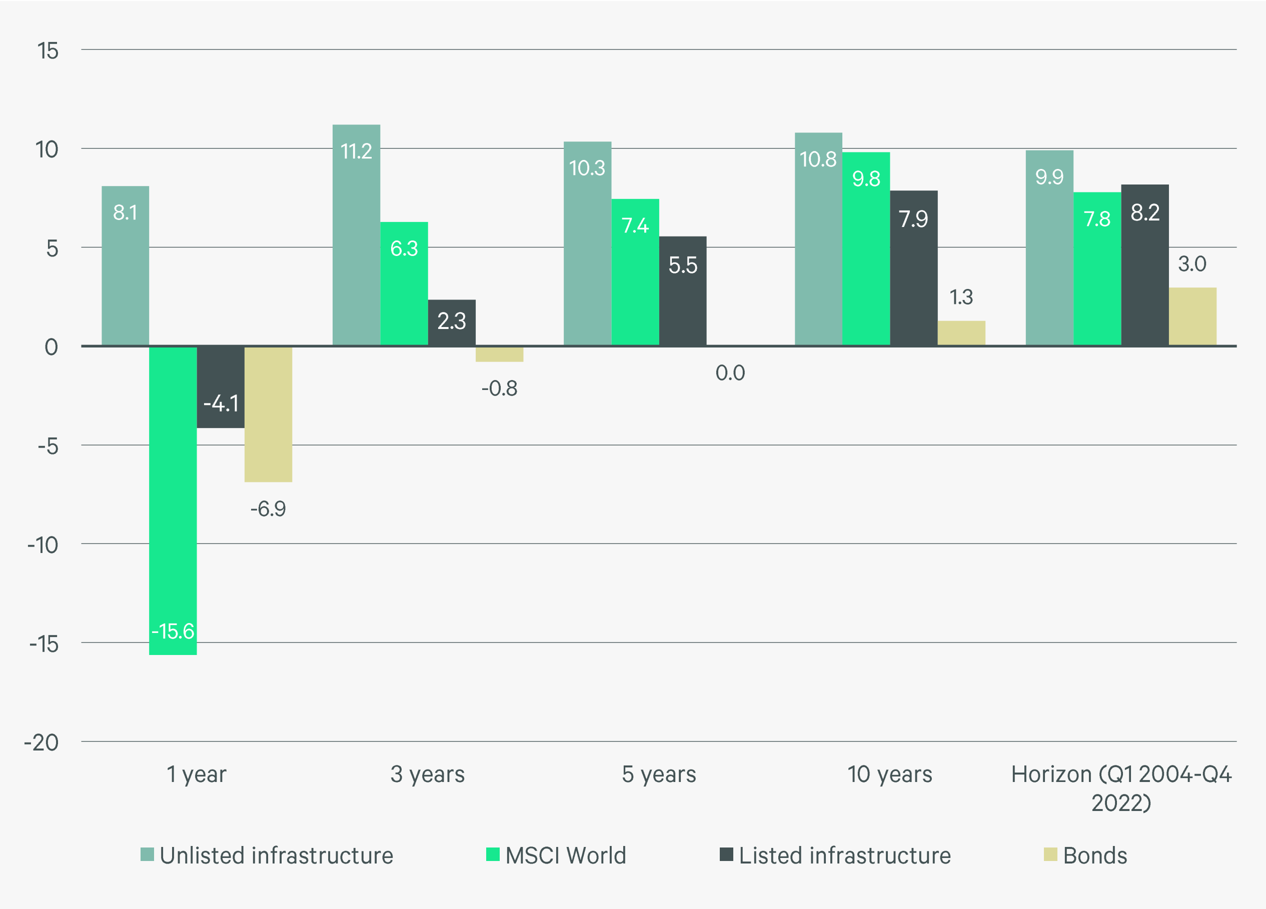
Market performance

Infrastructure markets displayed resilience in Q1 with positive returns across both listed and private benchmark indices. The EDHEC infra300® index, which tracks a representative global sample of 300 unlisted infrastructure equity investments worth $304 billion, posted local currency returns of 8.8%. Falling equity risk premiums, coupled with higher cash flow and dividend forecasts, has offset the negative impact of rising interest rates, driving net asset values 2.2% higher over the past year (EDHECinfra). Asset value resilience is also reflected in the performance of the Cambridge Associates Infrastructure index, which recorded strong returns of 8.1% in 2022. Unlisted infrastructure has proven to outperform both equities and bonds over time (**Figure 4**).

Often reflective of broader market sentiment, listed infrastructure delivered mixed yet positive returns over the quarter. The FTSE Global Core Infrastructure 50/50 index returned 0.7% in Q1, with European infrastructure driving performance. Transport was a standout sector as airport and toll road passenger volumes approach, and in some regions exceed, pre-pandemic levels.

Financing conditions have tightened across the board and credit is becoming more restrictive. That said, after reaching their highest level since 2007 last year, five-year corporate bond yields for U.S. investment grade companies have moderated. Moreover, just 8.8% of unlisted infrastructure debt comes due within the next three years (EDHECinfra).

Figure 4: Annualized returns of infrastructure equities, general equities and bonds (%)*



*Unlisted infrastructure refers to the Cambridge Associates Infrastructure index, comprised of 129 funds with a market capitalization of $358 billion, returns net of fees in U.S. dollars. Listed infrastructure as the FTSE Global Core Infrastructure 50/50 index in U.S. dollars. Bonds refers to the BofA Global Corporate index in U.S. dollars.
Source: Refinitiv, Factset. Analysis is based on annualized total returns from Q1 2004 to Q4 2022. FTSE 50/50 index horizon from Q1 2006.

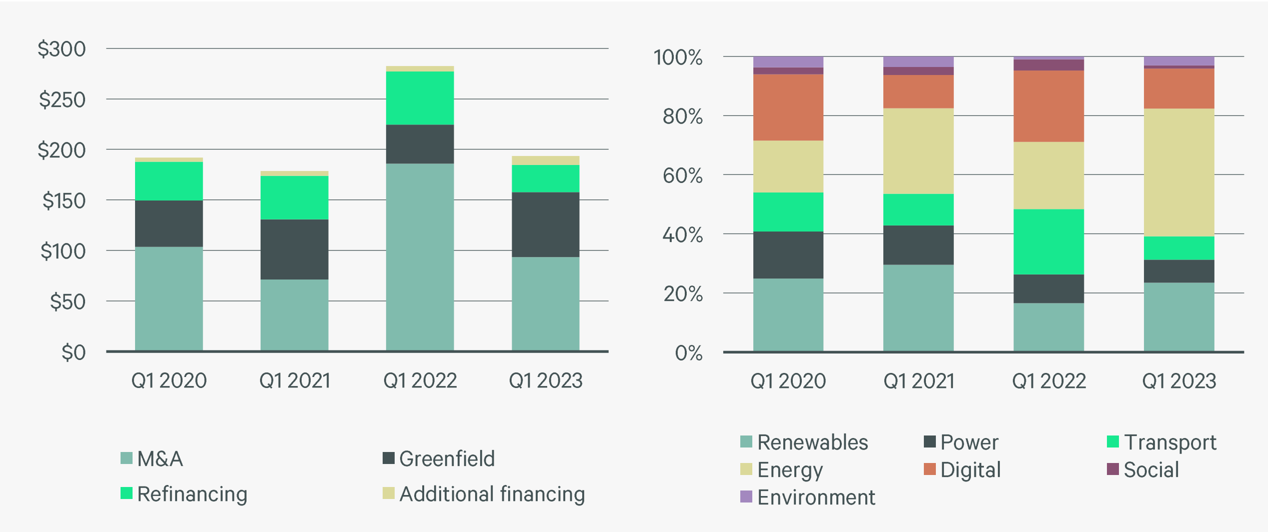
Deal activity

Gas drives dealmaking

A similar story to fundraising, the number of year-over-year private infrastructure transactions fell 29% in Q1 2023 (Infralogic). Deal value also fell, though at $193.6 billion follows last year's record-setting activity as the second-highest first quarter in over a decade. This was due to several large gas deals amid an overall slowdown. Energy drew over 40% of deal value, which combined with increasing renewables activity, saw energy transition deals reach a first quarter record of $76.3 billion.

North American activity surpassed that of Europe, with the U.S. alone representing over 36% of total deal value, at $70.6 billion. Debt markets were hit with tighter borrowing requirements, more selective lending and a widespread sense that elevated base rates may be temporary. Substantial capital remains to be deployed, with dry powder constituting 30% of total infrastructure AUM as of mid-June (Preqin). Transport and renewables comprise the lion's share of the $3.5 trillion live deal pipeline, focused across the U.S., China, Brazil and the U.K.

Figure 5: First quarter infrastructure deal value by type ($ billions) and market share by sector deal values (%)



Source: Infralogic Q1 2023 rankings and trend report, April 13, 2023.

Market themes and notable transactions

With an average value of $1.1 billion per transaction, energy was the quarter's most active sector. Four transactions across gas distribution sales and liquified natural gas (LNG) terminal developments drove activity: the majority stake acquisition of National Grid Gas for $9.9 billion, the sale of energy infrastructure holding company South Jersey Industries for $8.1 billion, $7.8 billion in project financing for Phase 2 of Plaquemines Parish LNG in Louisiana, and $6.8 billion in financing for Phase 1 of the Port Arthur LNG export terminal in Texas (all values based on Infralogic).

An important transition fuel for both decarbonization and Europe's quest for energy security, natural gas will likely continue to experience a slew of terminal development and asset sales. The demand outlook for the renewables, digital and transport infrastructure sectors remains unwavering, as expanding global clean energy funding policies continue to create growth opportunities and drive deal flow.

Q&A: Infrastructure Pulse

In this edition of Infrastructure Quarterly, we speak with Jon Phillips, Chief Executive of the Global Infrastructure Investor Association (GIIA), about the findings of its Q2 2023 Infrastructure Pulse survey, compiled alongside members Alvarez & Marsal.

Global Infrastructure Investor Association

Jon Phillips
Chief Executive of the Global Infrastructure Investor Association (GIIA)

Question	Answer
Jon, let's start with a brief background on the purpose of the Pulse and what the latest survey uncovers in terms of infrastructure investor sentiment.	Our Pulse survey is a twice-yearly snapshot of attitudes among our members, who collectively hold $1.6 trillion in infrastructure assets. The survey tracks investor sentiment by market and by sector, as well as capital raising and barriers to delivery. High inflation and borrowing costs have played a big part in shaping investment strategies over the first half of 2023. They are also significantly impacting sentiment towards borrowing and fundraising, which has turned negative for the first time since we launched the survey three years ago.
Interestingly, despite these concerns about raising funds and debt, close to half of infrastructure investors expect strong deployment of $1 billion or more in equity in the next 12 months. Why is that and what are the preferred strategies?	With its long-term outlook and stable returns, infrastructure as an asset class is demonstrating its resilience in challenging circumstances. The proportion of our members planning to deploy $1 billion or more over the next year is up this quarter, as is the number planning to divest. The Pulse points to an overall shift from "core" assets, where returns may more closely track currently high risk-free rates of return, towards "core plus" investments where more significant growth in asset values is targeted alongside yields.
On the bright side, the Pulse findings likely indicate that the gap between seller and buyer expectations is narrowing. Let's talk a bit more about risks. What are the main considerations around, and barriers to, infrastructure investment?	Our members flag borrowing costs as on par with inflation as the top risk to both existing portfolios and new investment opportunities. With regards to environmental, social and governance considerations, it's now supply chain management which is perceived as the greatest challenge to delivery of best practice, just ahead of climate change. On the policy side, regulatory reform is our members' top ask of governments, alongside climate friendly incentives and creating market frameworks which stimulate demand.
Last year, we wrote extensively about the investment tailwinds due to the Inflation Reduction Act in the U.S. and energy security considerations in Europe. What is the Pulse showing in terms of the attractiveness of different regions?	The U.S. is now streets ahead of all the other markets we survey across Europe and the Americas in terms of member appetite to invest. The country's green incentives are proving especially effective, with four in 10 GIIA members planning to deploy at least $5 billion in net zero investments across the country over the next five years, compared to just two in 10 in Europe. Canada and large parts of Northern Europe also score highly, whilst the U.K. is still recovering from a huge drop in sentiment last autumn. Members state that "political instability" and an "unattractive regulatory regime" are considerably bigger barriers to investment in the U.K. compared to North America and the rest of Europe.

For more details about the Pulse, follow GIIA's Infrastructure Pulse Survey.

Power & utilities

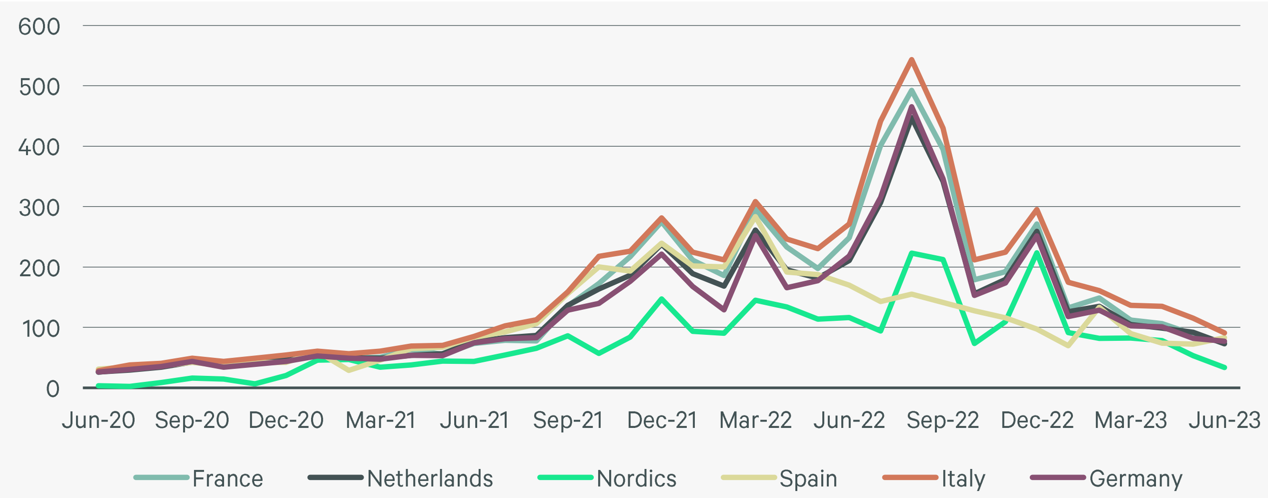
The twin pillars of energy security and the energy transition continue to characterize global power markets. Decarbonization, electrification and grid resilience are creating a capex super-cycle among global utilities to accommodate renewable energy buildouts and replace ageing networks.

2023 capital spending by U.S. electric, gas and multi-utilities is expected to rise by more than 18% from 2022 to a record $171 billion (S&P Capital IQ). Rate base expansion is expected to deliver solid profit expansion for utilities over the next few years. Companies are focusing efforts on advancing reliability and resiliency, accommodating electric vehicles, improving energy efficiency and developing battery storage and other smart grid technologies. Asset sales and divestitures are also increasing, particularly across non-regulated assets, as energy companies shore up balance sheets and prepare for the energy transition.

Decarbonization policy offers the best growth prospects for electric transmission and distribution networks in decades. That said, peaking global bond yields continue to weigh on utility performance. Continuously rising costs tend to weaken financial measures across the industry—the recovery of higher operational costs comes with a delay from when they were incurred. Additionally, the global regulatory spotlight shines on customer affordability—authorized returns for U.S. utilities in 2022 were the third-lowest annual average on record. However, while affordability concerns have not abated in 2023, they have moderated in Europe with the steep decline in power prices from their peaks last summer (**Figure 6**). Record profits from spiking power prices in 2022 have also created room for European utilities to accelerate spending in areas such as storage and renewable projects.

The backdrop remains supportive, with government focus on energy security and decarbonization driving incentive programs.

Figure 6: European baseload power prices continue to moderate (€/MWh)

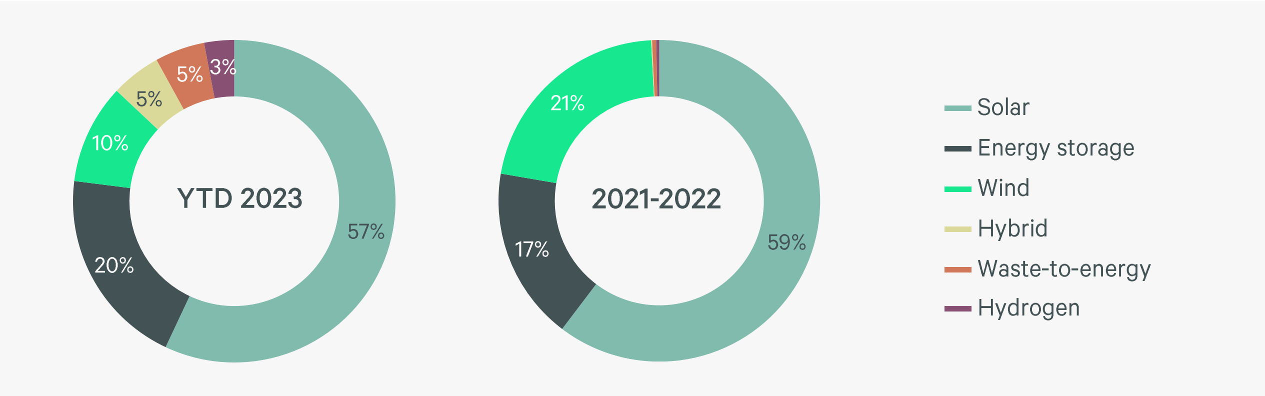


Source: Refinitiv Monthly European Power Prices to June 1, 2023.

Renewables

Existing and future U.S. clean energy exposure is poised to benefit from the plethora of renewable ramp-up incentives offered by the $369 billion Inflation Reduction Act (IRA). In response, the EU announced the Green Deal Industrial Plan (GDIP) to tackle key industry bottlenecks such as permit delays and to sweeten the investment case for renewables in Europe. As a result of the slew of supportive policy announcements last year, the International Energy Agency (IEA) revised global renewable capacity by 2027 up almost 30%. Incentive schemes are already yielding results: new solar power capacity in the U.S. jumped 47% year-over-year in Q1 (S&P Capital IQ) and emerging technologies are gaining traction (**Figure 7**).

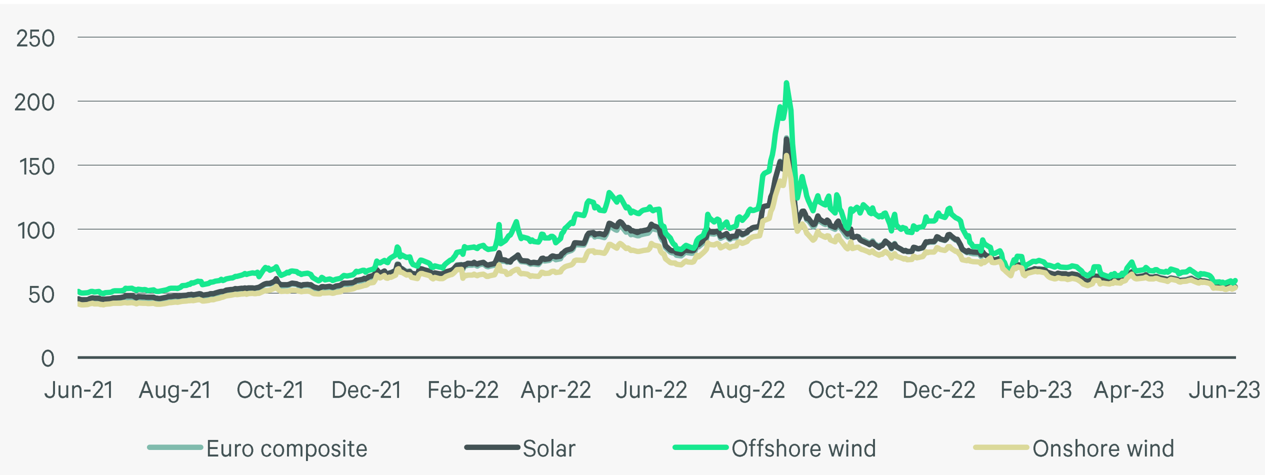
Figure 7: Renewables projects reaching financial close in the U.S. by subsector (2023 vs. 2021-2022)



Source: Inspiratia dataLive, June 2023.

Power Purchase Agreement (PPA) activity is reflecting the clean energy opportunity. March signified the second month in a row of record PPA capacity additions, leading Q1 to finish at an all-time high of 6,158 MW. Cooling PPA prices (**Figure 8**) and the European Commission's long-awaited proposal to reform the electricity market design are providing producers and off-takers with transparency and price stability. Among other reforms, state guarantees and aid would reduce credit risk for the off-taker, while the creation of reference hubs for forward contracts would increase price transparency and hedging possibilities. Across the pond, despite hurdles such as interconnection queues and uncertainty around IRA implementation and trade policy, the U.S. clean energy development pipeline grew 11% year-over-year in Q1, led by solar (ACP).

Figure 8: European renewable PPA prices, Pexapark composites (€/MWh)



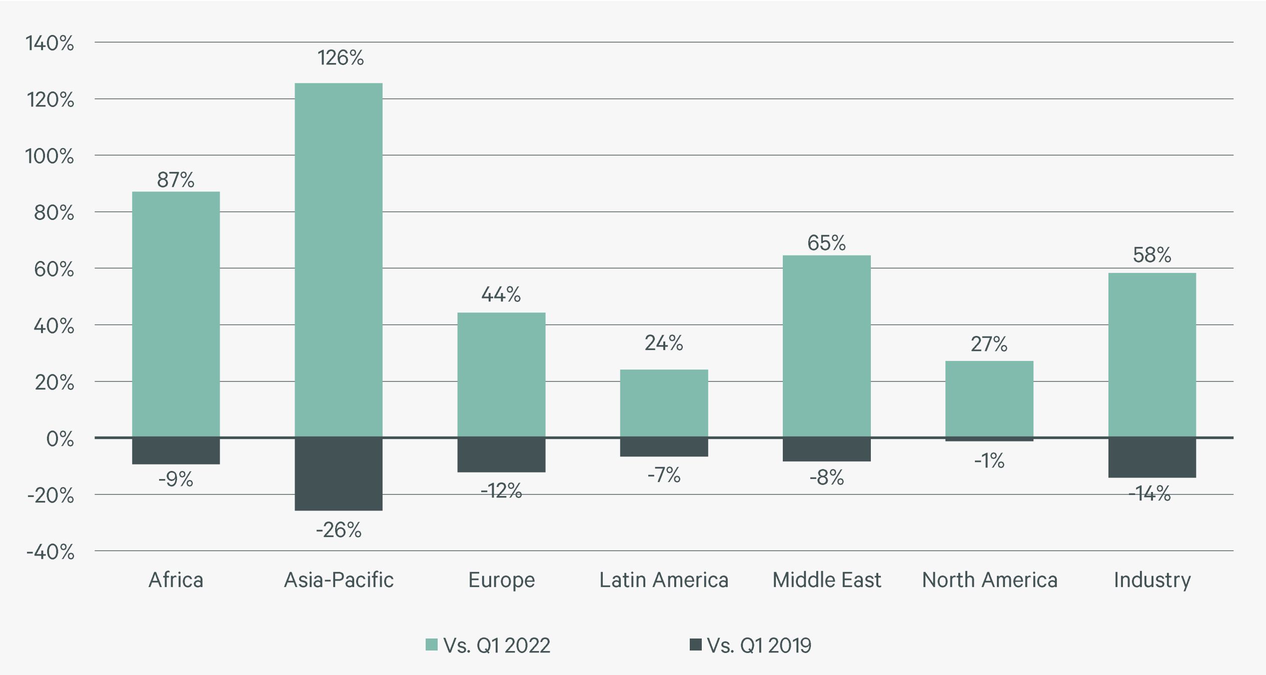
Source: Pexapark as of June 8, 2023.

Transport

Consumer demand and investor appetite continues to improve after a challenging few years for the transport sector. Transport deals achieved a record-setting year in 2022, climbing to $265 billion. After a relatively quiet quarter in terms of dealmaking, $1.58 trillion in transportation deals are currently live, more than 50% of the entire private infrastructure pipeline. Sustainability is driving investment in the space—billions of dollars in worldwide funding schemes aim to expand new fuel and electrification technologies in order to transform a sector responsible for over 37% of global CO_2 emissions (IEA).

Tight capacity and robust demand for short-haul leisure travel underpins the European air transport market. While air traffic differs by region, recovery is universal (**Figure 9**). Relatively lower fuel prices this year will help alleviate cost pressure, and airfares are likely to remain elevated as pent-up demand, accumulated savings and low unemployment drive discretionary spending. Airports and airlines with exposure to long-haul and business travel will likely lag those with domestic and short-haul exposure. Greater scrutiny of new airport developments due to budgetary pressures and ESG considerations (such as emissions, noise and community impacts) could complicate future investment in European airports.

Figure 9: Growth in Revenue Passenger Kilometers (RPK)* by region, Q1 2023 vs. Q1 2022 and Q1 2019 levels



* RPKs are a key airline travel metric, using the number of kilometers travelled by paying passengers as a proxy for airline traffic.
Source: IATA Monthly Statistics, May 2023.

On the ground, toll roads experienced robust traffic volumes in Q1, especially those in Asia-Pacific and Europe, which have for the most part fully recovered to pre-pandemic levels. As user-pays assets, many toll roads will see high inflation translating into toll uplifts, supporting earnings growth into 2024. Port volumes remain uncertain as global trade decelerates in an economic slowdown. Long-term trends towards domestic production for security of supply and decarbonization, as well as escalating tensions between the U.S. and China, present downside risks.

Affordability remains a key driver of demand and regulatory decisions. The tug-of-war between operator remuneration and diminishing disposable incomes could lead regulators to resist raising tariffs, while consistently high ticket prices could erode demand and traffic volumes.

Digital infrastructure

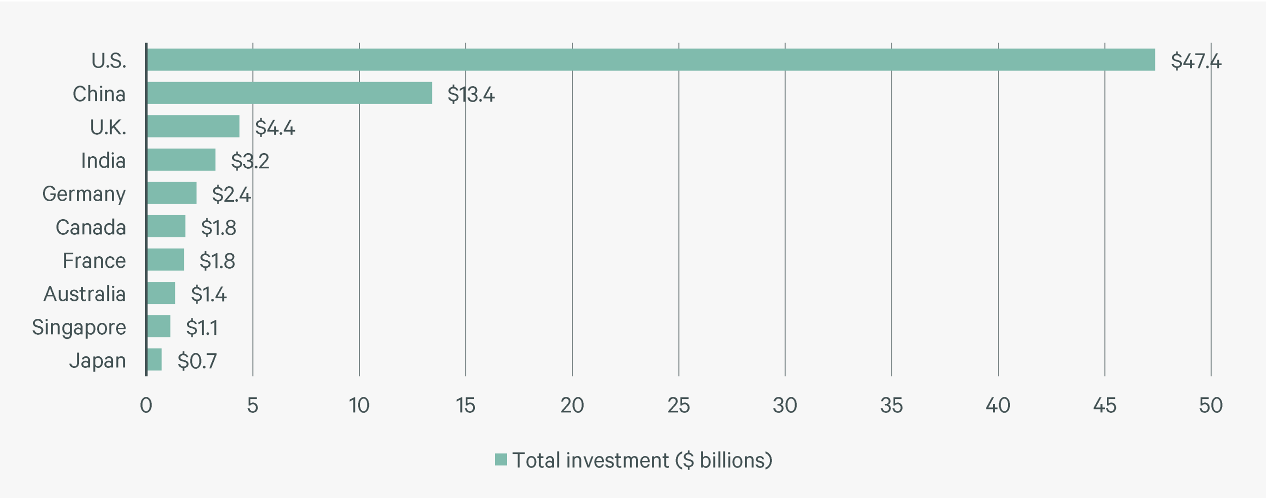
Digital infrastructure has been a standout performer in recent years and a growing allocation within investor portfolios. Structural tailwinds still blow, though increased construction costs, coupled with supply chain constraints relating to manpower and raw materials, pressure margins across the sector.

Despite challenges, the digital transformation is in full force. Deployment targets and funding schemes within the U.S. Bipartisan Infrastructure Law, China's Rollout Plan for Digital China, and the EU's Plan for the Digital Decade illustrate priorities to expand digital infrastructure worldwide. Demand continues to outpace supply across the sector: major North American data center markets saw a historically low vacancy rate of 2.9% in Q1 (datacenterHawk), while the tower leasing pipeline remains robust (S&P Capital IQ).

The AI gold rush is poised to transform the data center landscape. Resource-intensive AI workloads require vast amounts of power, spurring billions of dollars in capex by data center operators over the next decade. Meta expects AI chips to consume over five times the power of typical CPU servers. The training process of ChatGPT 4 required energy equivalent to the annual consumption of 700 U.S. households (Nature Communications). With potential to become a crucial tool for optimizing energy efficiency, resource allocation, predictive maintenance and other cost-reduction measures, AI will require significant capex. Improvements in data center infrastructure such as cooling systems and backup power will be crucial to accommodate advanced computing and eliminate obsolescence risk. The International Data Corporation (IDC) projects a 27% CAGR of global AI spending to 2026, quadruple the rate of overall IT expenditure, with the U.S. as the largest market.

Despite higher costs of capital, structural drivers and demand growth are leading to solid asset valuations and keeping managers bullish on digital infrastructure.

Figure 10: Private investment in artificial intelligence (AI) by key countries in 2022



Source: Stanford University Human-Centered Artificial Intelligence, Artificial Intelligence Index Report 2023, NetBase Quid, 2022.

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