BUILDING THE “2023 INSTITUTIONAL INFRASTRUCTURE ALLOCATIONS MONITOR”

A Professional Report

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by

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BUILDING THE "2023 INSTITUTIONAL INFRASTRUCTURE ALLOCATION MONITOR"

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ABSTRACT

Infrastructure underlies modern societies, providing essential services such as transportation, energy, water, and communication. However, public and private investment in infrastructure is not keeping pace with growing demand in a dynamic world nor with what is required to maintain a good state-of-repair. Where public investment is falling short, the unique risk-returns characteristics of infrastructure are increasingly attracting private capital. In a rapidly growing market of institutional investment in infrastructure, there is a need for comprehensive market research on changing trends. Hodes Weill & Associates and the Cornell Program in Infrastructure Policy have partnered to develop the first annual report on institutional allocations to infrastructure. This professional report shares the preliminary findings of this research, indicating a strong investor sentiment towards infrastructure, intentions to increase infrastructure allocations, and preferences by sector, region, and strategy. This report also documents the methodology employed to inform future editions of the Institutional Infrastructure Allocations Monitor.

BIOGRAPHICAL SKETCH

Nina Jazmin Borja Marcial is a bicultural built environment professional who spend her formative years between Quito, Ecuador and Milltown, New Jersey. Prior to pursuing her master's degree in Regional Planning at Cornell University, Nina studied Architecture at the Pontificia Universidad Católica del Ecuador and worked at the intersection of architecture, planning, and cultural institutions in Quito.

Throughout her graduate studies, Nina sought out opportunities that would fuel her personal and professional growth. She was selected as the Atkinson-Tetreault Fellow '21-'23 for the Cornell Branch of the Telluride Association, where she honed her leadership skills and contributed to the vibrant scholars' residence through community-building efforts. Nina gained unique exposure to the infrastructure industry as an Infrastructure Policy, Management, and Finance Fellow associated with the Cornell Program in Infrastructure Policy and as a Research Associate intern at Hodes Weill & Associates. Nina was also a Project Management intern for the transportation team at the New York City Economic Development Corporation, where she designed a workshop for Offshore Wind NYC and wrote grants that won over 5 million dollars from the U.S. DOT Maritime Administration.

At Cornell, Nina centered her studies on global infrastructure development, a rapidly expanding field in need of new, diverse voices that can bring an awareness of social and environmental impact beyond ESG considerations and systemic thinking that transcends borders and mandates. She brings an interdisciplinary and intercultural approach to her practice and aims to leverage her acquired skills and lived experience to create more resilient and inclusive communities. Wherever her journey takes her, she remains committed to improving our wellbeing within society and place.

ACKNOWLEDGMENTS

I am grateful for God's blessings that have brought me on the journey to this momentous occasion, and I do not take them for granted. My achievements are thanks to a crowd of mentors, family, and friends that have stood by me through all of life's obstacles and joys.

I would like to thank my advisor Nick Klein for supporting my academic and professional endeavors at Cornell. My appreciation to Hodes Weill & Associates and the Cornell Program in Infrastructure Policy for spearheading this research. Thank you to the faculty and staff both at CRP and beyond Sibley, who have been my advisors, mentors, and advocates throughout the last two years.

My time at Cornell has been defined by the opportunity to build supportive communities and form lasting friendships. I would like to especially highlight the lessons learned and memories made with the Reading Group, Telluride, IPMFers and more friends. I cannot imagine having gone through this experience without you all.

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Principalmente, quiero agradecer a mi familia por su apoyo y amor incondicional. Uds. cruzaron el mundo más de una vez para asegurar que tuviéramos todas las oportunidades y realizáramos nuestro potencial. Yo buscaré dejar nuestra huella en el mundo, manteniéndome siempre enraizada en nuestro hogar.

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TABLE OF CONTENTS

BIOGRAPHICAL SKETCH ..... **iii**
ACKNOWLEDGMENTS ..... **iv**
TABLE OF CONTENTS ..... **v**
LIST OF FIGURES ..... **vi**
LIST OF ABBREVIATIONS ..... **vii**
PREFACE ..... **viii**
INTRODUCTION **1**
LITERATURE REVIEW **3**
What is Infrastructure? 3
The Infrastructure Gap 5
Private Investment in Infrastructure 6
Institutional Investment in Infrastructure 7
Surveying Institutional Investors 9
METHODOLOGY **11**
Background 11
Objective 11
Sampling Method 12
Survey Design 13
Survey Administration 16
Data Analysis 16
FINDINGS AND DISCUSSION **18**
Participation Summary 18
Analysis 21
LIMITATIONS AND RECOMMENDATIONS **28**
CONCLUSION **31**
APPENDIX A: SURVEY **32**
APPENDIX B: IRB EMAIL **47**
APPENDIX C: QUALTRICS OVERVIEW **48**
REFERENCES **51**

LIST OF FIGURES

Figure 1; Infrastructure Sectors in Infrastructure Investment 4
Figure 2: Global Unlisted Infrastructure Capital Raising from 2014 to 2022 8
Figure 3; List of Participating Institutions 18
Figure 4; Breakdown of Participants by Type of Institution 19
Figure 5; Breakdown of Participants by Size of Institution 20
Figure 6; Breakdown of Participants by Location of Institution 21
Figure 7; Actual Allocations vs. Target Allocations 22
Figure 8; Institutional Conviction Scale 23
Figure 9; Investment Preferences by Sector 24
Figure 10; Geographic Preference of Investors 25
Figure 11; Investment Preferences by Sector 26
Figure 12; Investment Preferences by Sub-sector: Energy 27

LIST OF ABBREVIATIONS

CPIP: Cornell Program in Infrastructure Policy

HW: Hodes Weill & Associates

CRP: City & Regional Planning

MRP: Master in Regional Planning

ESG: Environmental, Social, and Governance

DEI: Diversity, Equity, and Inclusion

APAC: Asia-Pacific

EMEA: Europe, the Middle East and Africa

OECD: Organization for Economic Cooperation and Development

P3/PPP: Public-Private Partnership

CPI: Consumer Price Index

LP: Limited Partner

GP: General Partner

IIJA: Infrastructure Investment and Jobs Act

IRA: Inflation Reduction Act

AUM: Assets under Management

SWF: Sovereign Wealth Fund

PREFACE

In May 2022, Hodes Weill & Associates' Real Assets team approached the directors of the Cornell Program in Infrastructure Policy to propose a partnership between the two entities and develop an Infrastructure Allocations Monitor. The proposed 2023 Institutional Infrastructure Allocations Monitor would be the first of its kind for organizations and for the industry. It would be modeled after the Real Estate Allocations Monitor, which has been running for a decade and has been made possible through a partnership between the Cornell Baker Program in Real Estate and Hodes Weill & Associates. A similar approach would be implemented that could deliver a comprehensive survey and report to contribute to scholarship on trends in institutional infrastructure investment while advancing organizational goals of both CPIP and HW[1].

From this partnership arose the 2022-2023 Research Associate internship role for the 2023 Infrastructure Allocations Monitor with Hodes Weill & Associates, for which I was selected. I sought out this opportunity because I was excited about conducting applied research during my Cornell tenure. Due to my commitments beyond the Master in Regional Planning program, specifically the Atkinson-Tetreault Fellowship with the Cornell Branch of the Telluride Association, my involvement in CRP faculty-led research was limited. Furthermore, as I embark on a career in infrastructure delivery, I am eager to gain a deeper understanding of how the current economic climate affects investment in infrastructure, which is essential for the development of people and place.

The decision to center this Professional Report on my experience conducting the inaugural Institutional Infrastructure Allocations Monitor was also motivated by the Real Asset team's need for a documented, replicable, and scalable process that can be referenced for future editions. Therefore, this report seeks to offer an analytical lens on the successes

[1] More information regarding the Real Estate Allocations Monitor, which published its tenth annual report in 2022, can be found on Hodes Weill's website: https://www.hodesweill.com/research. Information on the Cornell Program in Infrastructure Policy can be found at: https://publicpolicy.cornell.edu/impact/centers-programs-institutes/cpip/

and challenges during the deployment of the first edition of the Institutional Infrastructure Allocations Monitor. This report accomplishes that by synthesizing relevant literature, documenting the methodology employed, sharing preliminary findings of this research and an analysis of the results, and concluding with limitations of this study and recommendations for future editions.

INTRODUCTION

Infrastructure refers to the structures and networks that provide services critical for society, including but not limited to transportation, energy, water, communication, and social systems. Infrastructure is unique because it is commonly capital intensive, quasi-monopolistic, and highly regulated. Public and private investment in infrastructure is not keeping pace with growing demand in a dynamic world nor with what is required to maintain a good state-of-repair. This is commonly known as the infrastructure gap. Where public investment is falling short, the unique risk-returns characteristics of infrastructure are increasingly attracting private capital. In a rapidly growing market of institutional investment in infrastructure, there is a need for comprehensive market research on changing trends.

The 2023 Infrastructure Allocations Monitor is the first-annual report on Institutional Allocations to Infrastructure, fruit of a partnership between Cornell University's Program in Infrastructure Policy (CPIP) and Hodes Weill & Associates (HW). The Monitor aims to address the role of infrastructure in institutional portfolios, analyze trends in institutional capital flows to the infrastructure asset class, and assess the impact of institutional allocation trends on the investment management industry, all on a global scale (Weill et al., 2022). The inaugural edition of the Infrastructure Allocations Monitor will set in motion a comprehensive annual assessment of institutions' objectives and allocations in infrastructure investing. The trends in institutional portfolios and allocations will be analyzed by region, type, and size of institution.

The survey consists of 28 questions that cover key topics in institutional allocation trends, which can be tracked year-over-year. These areas include the institutions' definition of real assets; actual and target portfolio allocations to the asset class; historical and target returns; investment intentions by sector, risk profile and geographies; investor conviction;

management trends; and approaches to environment, social and governance (ESG) considerations as well as Diversity, Equity, and Inclusion (DEI) in investing.

In Spring 2023, we conducted a web-based opt-in survey for institutional investors, limiting our sample to institutional investors globally with assets under management (AUM) above $500 Million, who actively invest in infrastructure. We only considered primary allocators to investments, thereby limiting the sample to Public Pensions, Private Pensions, Insurance Companies, Sovereign Wealth Funds/Government Agencies, Endowments/Foundations, and Family Offices. The survey was distributed to approximately 1,800 institutional investors and has received 34 responses to date, resulting in a participation rate of 2%. The survey participants are from 9 countries and represent institutions with over US$2.1 trillion in total assets and US$70 billion in infrastructure assets.

The 2023 Infrastructure Allocations Monitor survey continues to collect data as it seeks to achieve a meaningful sample-set of institutional investors by size, type, and region. The survey results will be presented in the 2023 Infrastructure Allocations Monitor Report, which should serve as a valuable tool for both institutional investors in the development of portfolio allocation strategies and investment managers in business planning and product development.

LITERATURE REVIEW

What is Infrastructure?

Built environment professionals, both in the public and private sectors, widely agree that infrastructure is fundamental to the operation and advancement of societies and economies. However, there is a lack of consensus on what infrastructure precisely encompasses. The Oxford Essential Dictionary of the U.S. Military (2002) defines infrastructure in its broadest sense as "the basic physical and organization structures and facilities needed for the operation of a society or enterprise." Similarly, Dr Larry Beeferman and Dr Allan Wain (2012) define infrastructure as that which "provides services and support that are basic to the functioning of a community, organization, or society and crucial to its economic productivity." Conversely, when studying individual governmental agencies and private institutions, infrastructure is often defined and classified by their specific mandates and priorities. In figure 1 below, we can observe the classification of infrastructure sectors according to Preqin, an alternative assets data and intelligence source. Overall, physical infrastructure can include but is not limited to transportation (e.g., roads, bridges, ports), energy (e.g. power generation, transmission, distribution), water (e.g. dams, pipelines), telecommunication (e.g. fiber optics, cable), and social infrastructure (e.g. schools, hospitals).

Figure 1; Infrastructure Sectors in Infrastructure Investment

Source: (Preqin, n.d.)

Despite the evolving nature of infrastructure, it possesses certain key features that make it distinguishable. Although infrastructure is not strictly a public good, it exudes positives externalities and provides services critical for everyday life, such as communication, mobility, or education. These services are generally provided through a network or system which necessitates high upfront capital costs (Richard Geddes, 2021). This significant, irreversible investment required for infrastructure sets up a significant technical and economic barrier to entry. Therefore, infrastructure often exhibits characteristics of a natural monopoly. A natural monopoly occurs when, due to economies of scale, it is most efficient for a single firm to provide a service or a facility (e.g., a utility water provider or an airport in a small city) rather than having unrestricted competing firms.

Governments enforce this natural monopoly while simultaneously correcting it through regulations, to protect consumers and ensure fair provision of public goods. The precise configuration of these features varies greatly by asset, locality, and the contractual relationship between public and private parties involved.

The Infrastructure Gap

Recognizing the crucial role of infrastructure for the operation and progress of societies and economies, investment in this sector is falling significantly short of what is needed. This is widely known as the infrastructure (funding and financing) gap. The McKinsey Global Institute (2013) estimated that US$3.3 trillion must be spent annually through 2030 to keep pace with projected global GDP growth. This is 60% more than the historical global average expenditure of US$2 trillion. It is important to note that this estimate may be conservative because it is based on global rates of growth and does not consider maintenance backlogs, development goals of emerging countries, or climate resiliency (Organization for Economic Cooperation and Development, 2018).

The United States last saw major federal investment in infrastructure with the Federal-Aid Highway Act of 1956 under President Dwight D. Eisenhower, who propelled the interstate highway system that transformed the movement of people and goods (Weingroff, 2017). This investment was foundational to local and national economic growth. Thereafter, insufficient long-term investment in maintenance and renewal of infrastructure has escalated to a critical state of affairs. According to the "Report Card for America's Infrastructure" from the American Society of Civil Engineers (2003), "the nation is failing to maintain even the current substandard conditions, a dangerous trend that is affecting highway safety and the health of the economy". The United States' "crumbling infrastructure" requires action to bridge the funding gap.

The United States federal government response to the national infrastructure gap was realized through the Infrastructure Investment and Jobs Act (IIJA), signed into law on November 15, 2021, and the Inflation Reduction Act (IRA), signed into law on August 16, 2022. The IIJA authorizes $1.2 trillion for infrastructure spending over the next five years (117th Congress, 2021). $550 billion is allocated for new investments, while the remaining funds are part of the baseline level that supports existing programs. This funding reaches across sectors (e.g., transportation, energy, digital, water, social) and at different levels of government (local, regional, and national agencies). Overall, the IIJA seeks to direct new and existing monies towards state of good repair programs. The funding programs are at various stages of development, with many of the new programs yet to be released.

As current infrastructure ages and fails to keep pace with a growing population and modern challenges, there is a significant need for increased global infrastructure investment. While there has been a recent response locally to the infrastructure gap through increased public spending in the U.S., private investment has increasingly taken on a larger role in financing infrastructure in both developed and emerging economies.

Private Investment in Infrastructure

Although private investment in infrastructure has historically been central to the development of railways, ports, and other urban facilities, infrastructure as an asset class emerged only in the 1990s, following the privatization of utilities, telecommunication, and transportation in Australia and the U.K. (Inderst, 2018). The Reserve Bank of Australia reported in 1997 that Australia had one of the largest programs of privatization among OECD (Organization for Economic Co-operation and Development) countries, with sales of companies owned by the Commonwealth and State Governments amounting to about $61 billion between 1990 and 1997. During that same period, global privatization proceeds in OECD countries were expected to increase from US $30 to 100 billion (OECD, 1997 as

cited in Reserve Bank of Australia, 1997). In the early 2000s, infrastructure as an asset class expanded to Canada, Europe, and the U.S., and was subsequently adopted by other OECD member countries and later emerging countries (Andonov et al., 2021). According to Preqin (2023), more than $550 billion has been raised by unlisted infrastructure funds in the last decade.

The private financing of infrastructure has been a natural progression of privatization (Reserve Bank of Australia, 1997), leading to public-private partnerships (P3) concessions, whereby investors recoup initial capital and earn a return on their investment before transferring ownership and operations of an asset back to the public sector after an agreed period of time. The terms and conditions of public and private involvement vary greatly, but ultimately private investment may help shift the financial and technological risk associated with infrastructure projects away from the public sector partner.

Institutional Investment in Infrastructure

Institutional investors are attracted to infrastructure as an asset class because of its key features that align with their investment objectives. The long service life of infrastructure assets works well with the long-term liabilities of institutional investors such as pension funds and sovereign wealth funds (Aladekoba & Mohseni-Cheraghlou, 2022). Infrastructure is often protected against inflation, because cash flows (e.g., user fees) are usually adjusted for inflation and tied to indices such as the Consumer Price Index (CPI). The natural monopoly and regulation inherent to infrastructure provide captive end-users and limited competition, producing long-term stable cash flows (Rudovic et al., 2022). The capital-intensive nature of infrastructure complements private market fundraising, where large funds are deployed upfront while incurring low operational costs during the assets' useful life.

Institutional investors, including Public Pensions, Private Pensions, Insurance Companies, Sovereign Wealth Funds/Government Agencies, Endowments/Foundations, and Family Offices, Banks, etc. seek to diversify their portfolios from traditional stocks and bonds by investing in alternative asset classes, under which infrastructure lies. Figure 2 below illustrates how allocations to infrastructure have continued to increase in the long run, as evidenced by capital raised and number of funds between 2014 to 2022. McKinsey & Company (2023) reported that infrastructure and natural resources reached a new fundraising record in 2022, raising a total of $158 billion in 2022 globally. As a result, institutional investors' assets under management (AUM) in infrastructure and natural resources have surged to $1.3 trillion, representing a 14.2% increase from 2021.

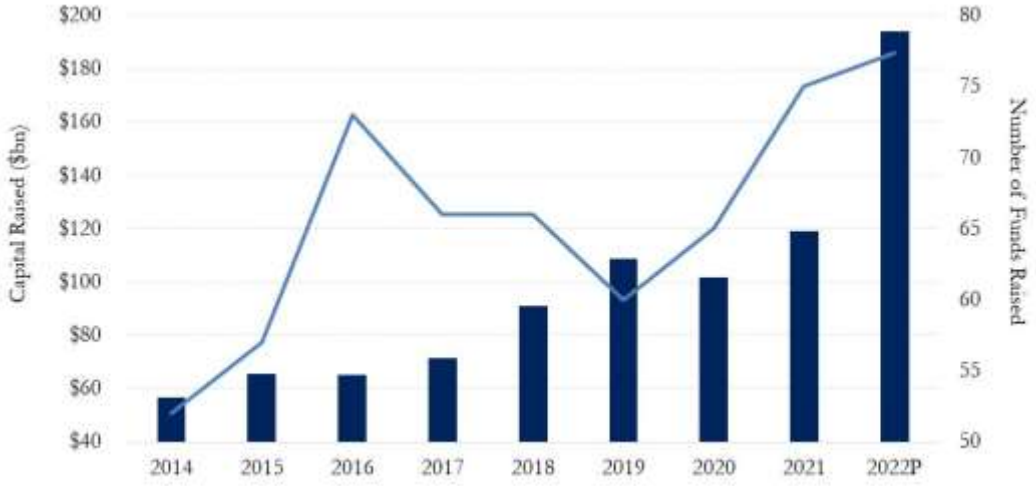

Figure 2: Global Unlisted Infrastructure Capital Raising from 2014 to 2022

Source: (Inframation, 2022 as cited in Hodes Weill, 2022)

Institutions have varying mandates and evolving priorities that drive them to pursue distinct infrastructure investment profiles both in the short and long term. Given the broad and dynamic nature of infrastructure, institutional investors can determine which specific sectors (e.g., renewable energy, natural resources, transportation, digital, social), risk profiles (e.g. super core, core, core+, value-add), geographies (e.g. North America, Latin

America, Europe, Asia-Pacific, Middle East & Africa, Emerging Markets), and strategies (e.g. debt, equity, venture) they wish to invest in.

Surveying Institutional Investors

In a rapidly growing market of institutional investment in infrastructure, there is a need for comprehensive market research that secures data points directly from institutional investors on an annual basis. This gap in information can limit the ability of both limited partners (LPs) who supply capital (i.e., institutional investors) and general partners (GPs) who raise funds (i.e. fund managers), to make well-informed decisions. By facilitating the sharing of information on fast-evolving trends, both the supply and demand side of institutional infrastructure investment stand to benefit.

Reports comparable to the Institutional Infrastructure Allocations Monitor include Infrastructure Investor's 2022 Investor Report, which is based on a database of over 1,300 fund manager profiles, 2,900 investor profiles, and more than 3,500 funds (Infrastructure Investor, 2022). Additionally, there is the Probitas Partner's 2022 Institutional Investors' Infrastructure Survey, which surveyed "investor appetite" among 36 varying types of institutional investors, including fund-of-funds, asset managers, and third-party consultants (Probitas Partners, 2022). Another report is the Global Infrastructure Hub Infrastructure Monitor 2022, which analyzes private investment in infrastructure, infrastructure investment performance, availability of private capital, and the role of multilateral development banks in private investment using data gathered from EDHECInfra, GRESB, MSCI and Moody's (Global Infrastructure Hub, 2022). Finally, the most well-known product is the 2022 Preqin Global Infrastructure Report, which uses data within Preqin Pro to provide insights on AUM, fundraising, fund managers, investors, deals, and performance (Preqin, 2023).

While other reports on private investment in infrastructure may offer slightly distinct insight into the current market, this report distinguishes itself on three aspects. Firstly, this

report focuses exclusively on investors and does not encompass funds or other investment products. The findings from the report therefore provide insight on the buy-side of infrastructure investing, which supply capital, and does not delve into the funds that seek to raise capital. Secondly, this report maintains a rigorous sampling approach, by targeting only primary allocators: public pensions, private pensions, insurance companies, sovereign wealth funds/government agencies, endowments/foundations, and family offices. The survey excludes banks, consultants, asset management companies, and fund-of-fund managers because their investment operations are fundamentally different than primary allocators, which can potentially skew the results. In addition, the sample is limited to institutional investors with assets under management (AUM) above $500 Million and that actively invest in infrastructure. Thirdly, we are conducting primary research by surveying institutional investors directly. Many reports rely on publicly available data that may be inconsistent and outdated. By surveying institutional investors directly, this study can maintain a similar sample set year over year. Ultimately, research on institutional investment to infrastructure aims to increase transparency among institutional investors of all sizes and locales, serving as an opportunity for peer benchmarking. Institutional investors can use this as a tool in the development of portfolio allocation strategies, and fund managers can use this information during business planning and product development to determine what investment opportunities they make available. Finally, this can produce a positive feedback loop for investors and fund managers that can inform decision-making for all parties.

METHODOLOGY

Background

Hodes Weill has been partnering with Cornell University's Baker program in Real Estate since 2013 to launch an annual Real Estate Allocations Monitor. In response to the growing role of private capital in infrastructure investment, Hodes Weill proposed the first-ever Institutional Infrastructure Allocations Monitor, to be developed in partnership with the Cornell Program in Infrastructure Policy. Therefore, the inaugural Infrastructure Allocations Monitor draws its methodology from previous years' Real Estate Allocations Monitor processes and reports. By implementing a similar approach, Hodes Weill and CPIP deliver a survey and report that contribute to scholarship on trends in institutional infrastructure investment.

Objective

The 2023 Institutional Infrastructure Allocations Monitor is a cross-sectional study of investment allocations and objectives in infrastructure on a global basis. The stated purpose of the Infrastructure Allocations Monitor is to assess trends in institutional capital flows to the infrastructure asset class, the role of infrastructure in investment portfolios, and the impact of institutional trends on the investment management industry (Hodes Weill et al, 2022). This first edition of the Infrastructure Monitor will provide a snapshot of trends in institutional infrastructure investment at this point in time. However, the Monitor is designed to be replicated annually, making the study longitudinal in nature. The same data points will be collected from the same pool of participants year over year, allowing for a rolling analysis of changes in institutional investment trends after the second edition.

Sampling Method

The population that this survey seeks to address is institutional infrastructure investors globally. A differentiating factor of this survey is that it implements a rigorous selection criteria, resulting in a highly targeted sample that meets specific attributes. Only primary allocators to investments are considered, thereby limiting the sample to Public Pensions, Private Pensions, Insurance Companies, Sovereign Wealth Funds/Government Agencies, Endowments/Foundations, and Family Offices. Consequently, Banks, Consultants, Asset Management Companies, and Fund-of-Fund Managers are excluded. Participation is not limited to any geographical area, however for analytical purposes, the location or headquarters of participating institutions are classified into three buckets: the Americas/North America; Europe, the Middle East and Africa (EMEA); and Asia-Pacific (APAC). The sample is limited to institutional investors with assets under management (AUM) above $500 Million and that actively invest in infrastructure. This constraint is applied because smaller institutional investors have a relatively lower incidence in infrastructure investment. Infrastructure requires significant amounts of capital to be committed for long-term investment horizons and a high level of industry expertise. Therefore, smaller institutions participate less frequently and at lesser "ticket sizes" in comparison to larger institutional investors.

The sample frame developed from the ground up for this survey and that will serve as a basis for outreach in future editions, is an institutional infrastructure investor contact directory. For each contact entry, the directory includes the company name, investor type (type of institution), Preqin URL and code, primary contact first name and last name, team (e.g., investment, finance, administrative, etc.), title/position, email address, and country/territory. This database was compiled using Preqin's Investors Advanced Search, Hodes Weill's coverage universe in Salesforce, and CPIP's outreach list. All contacts were examined to ensure they meet the minimum AUM requirement, actively invest in

infrastructure, have a contact with a publicly available email, and hold a relevant role within the institution to increase the likelihood they are the appropriate professional to participate in the survey. Approximately 1800 contacts were compiled that were deemed suitable for outreach.

Early in the research planning process, the Cornell Institutional Review Board for Human Participants (IRB) was consulted to verify whether this research would require IRB approval. Following a phone call with an IRB administrator and sending them a draft of the research introduction and survey, we received an email confirming that "it does not appear from the information you have provided that the work you are conducting meets the definition of a human subject and therefore if not human subject research your project would not require an IRB review and approval". The email also provided information regarding federal regulations on what qualifies as human subject research.

Survey Design

A web-based opt-in survey was developed for institutional investors. A questionnaire was developed and administered in Qualtrics. The survey consists of an introduction and consent page, followed by 28 questions that cover key topics in institutional allocation trends that can be tracked yearly. These main topics include the institutions' definition of real assets; actual and target portfolio allocations to the asset class; historical and target returns; investment intentions by sector, risk profile and geographies; investor conviction; management trends; and approaches to environment, social and governance (ESG) as well as Diversity, Equity, and Inclusion (DEI) in investing.

The survey was developed in coordination with the Real Assets team and underwent multiple rounds of revisions from the directors of the Cornell Program in Infrastructure Policy and my research advisor. Feedback was incorporated to strengthen the reliability of the results and participation.

The survey begins with a cover page that provides information about the study, its objectives, the organizations promoting the study, and their contact information. It includes a confidentiality statement, a request for their voluntary participation and a confirmation of consent to participate. An implicit incentive is that all participants and the public will have free access to the final report, the "2023 Institutional Infrastructure Allocations Monitor". Since most institutional investors cannot accept gifts, we did not offer monetary incentives for their participation. However, they were offered customized analytics through the following statement: "Participants will be provided with customized analytics upon request based on the data collected in the 2023 Allocations Monitor". This can help amplify the relevance of the finding for their purposes.

The survey questions were designed to collect metrics that can be reported year over year, such as current and target allocations, returns, and conviction index. These metrics are carried over from the Real Estate Allocations Monitor and are core to the research objectives of the Infrastructure Allocations Monitor. Additionally, the extensive experience and industry knowledge of the Real Assets team is leveraged to incorporate sector-specific questions and emerging topics into the research, such as defining real assets, subsector preferences, and ESG - DEI policies. For the purposes of this survey, the sub-sectors were categorized as Energy: Oil & Gas, Liquified Natural Gas, Renewable Energy & Storage, Electric Utilities & Transmission, New Energy Transition (Hydrogen, Carbon Capture, etc.); Transportation; Digital; Social; Other. Unlike previous Real Estate Allocations Monitors, this survey is the first edition to expand the ESG questions to include DEI approaches, such as allocating to impact investment and screening investments for criteria including team diversity.

The survey used several question types, including:

- Numeric Questions: “What is your Target Allocation percentage to infrastructure?”
- Likert scale questions: “How likely are you to invest with a first-time or emerging infrastructure fund manager?” (Very unlikely, somewhat unlikely, undecided, somewhat likely, very likely)
- Matrix questions: “How much capital do you plan to invest in infrastructure in 2023 as compared to 2022 in the following risk profiles: Super-core, core, core+, value-add” (more capital, same amount of capital, less capital, not investing)
- Open-ended questions: “Please provide any commentary on your target allocation to infrastructure.”
- Demographic questions: “Country Location/Headquarters”

To ensure a smooth survey experience, all questions were made optional and included, when possible, “N/A” and “Other” options. Participants were advised that “While we encourage you to answer all questions, please feel free to skip questions that you do not wish to answer or are not applicable.” Participants were prompted with further instructions right below the questions and some questions included footnotes to clarify the survey’s working definition of certain categories when needed. This is especially important to ensure consistency given that different institutions define certain terms differently. Questions were written and organized to minimize bias, promote precise responses, and ensure that participants can answer with information that they have easily available.

We conducted a pilot test of the survey by sending it to approximately 60 institutional investors. This list of investors was based on Hodes Weill’s existing relationships, thus facilitating direct email and phone call outreach. This round of testing was known as the “Founder’s Round”, emulating language used in private capital fundraising. Pre-testing allowed us to identify and fix confusing questions regarding

confidentiality and expiring survey links. Participants who agreed to disclose the name of their institutions as survey participants were dubbed “Founders” during broad launch outreach to encourage new institutions’ participation.

Survey Administration

The survey was administered through Qualtrics by the Cornell-affiliated Research Associate intern. Approximately 1800 contacts that were compiled and deemed suitable for outreach were imported to the Qualtrics directory. Unique links were created for each participant and a universal “Invitation to Participate in the 2023 Infrastructure Allocations Monitor” email message was drafted. Initial outreach and the first follow-up were conducted through the Qualtrics mailer. Due to a high rate of bounced emails and low engagement, a second follow-up was conducted via email using macros in excel to generate unique emails. This form of outreach resulted in increased email responsiveness, response rates, and more clarity into the causes of the bounced emails. Following this stage, Hodes Weill bankers were tasked with conducting outreach to institutional investors within their coverage universe, employing the same method of a universal invitation email individualized with an excel macros.

The survey, to date, has received 34 responses, resulting in a participation rate of 2%. The resulting survey participants are from 9 countries and represent institutions with over US$2.1 trillion in total assets and US$70 billion in infrastructure assets.

Data Analysis

Data was extracted from Qualtrics and uploaded to an excel spreadsheet that was adapted from previous editions of the Real Estate Allocations Monitor. Formulas in the spreadsheet were updated to account for changes in the survey structure and new questions. The spreadsheets take in raw data on the first sheet and output several tables and graphs on

the following sheets. Descriptive statistics methods are embedded in the formulas, using primarily straight or weighted means and medians, as deemed appropriate. The excel outputs are then analyzed by the Real Assets team members. Resulting statistics are reviewed to account for outliers, sampling, and response biases. Results are then cross-referenced with external data and notions about trends in the industry by the team. Salient trends are synthesized and presented as key findings supported by the statistical analysis presented in tables and graphs.

The following analysis and findings are preliminary, as outreach and data collection continue until a meaningful sample-set of institutional investors by size, type, and region is obtained. The preliminary findings were presented on April 20th, 2023, to the Cornell Program in Infrastructure Policy Advisory Board at Antin Infrastructure Partners' office. The findings were both debated and validated by attendees and fueled discussions on trends in the digital and transportation sectors, highlighting the differences in how public and private investors are responding to these emerging opportunities.

Once sufficient data has been collected, the final analysis and finding will lead into the writing of the final report, known as the "2023 Institutional Infrastructure Allocations Monitor". The Monitor shall be publicly launched by CPIP and Hodes Weill, and presented by both organizations via a publicized webinar and concurrent conferences or events.

FINDINGS AND DISCUSSION

Participation Summary

As of May 5th, 2023, the survey has gathered responses from a total of 46 qualifying institutions, 36 of which have opted to remain anonymous. As shown in figure 3, several public pensions, private pensions, insurance companies, and government agencies have offered to disclose their names as participants.

46 Participants (to date)

- Arkansas Teachers Retirement System
- Canada Post Corporation Pension Plan
- New Jersey State Investment Council
- Maine Public Employees Retirement System
- Manulife Insurance
- Public Employees Retirement Association of New Mexico
- Virginia Retirement System
- Alaska Permanent Fund Corporation
- Merseyside Pension Fund
- Toronto Transit Commission Pension Plan
- 36 Anonymous Participants

Figure 3; List of Participating Institutions

Public pensions have the highest participation rate by type of institution at 39%, followed by private pensions at 33%, endowments/foundations at 13%, insurance companies at 11%, and finally, sovereign wealth funds/government agencies with the lowest participation rate at 4%., as shown in figure 4. This participation breakdown mirrors the distribution of the Real Estate Allocations Monitor (Hodes Weill, 2022), suggesting a comparably representative universe of participating institutions. Sovereign wealth funds/government agencies are underrepresented in the sample, thus requiring caution when interpreting data specific to this class.

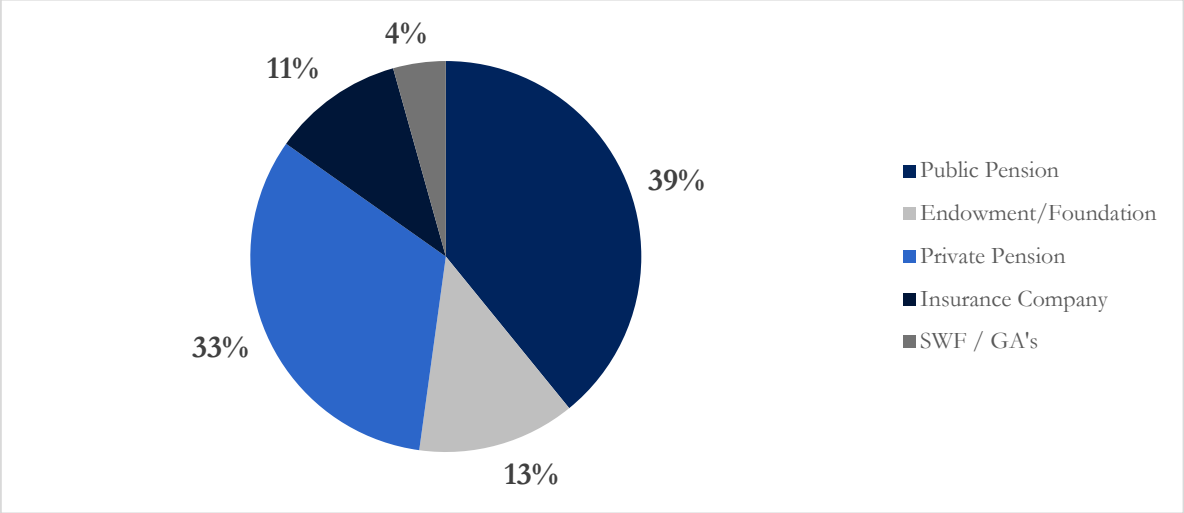

Figure 4; Breakdown of Participants by Type of Institution

Assets under management (AUM) serves as a measure of the size of the investor and reflects their investment capacity. The distribution of AUM across participating institutions, ranging between less than $1 billion and greater than $200 billion, follows a normal distribution. As shown in figure 5, the median AUM for participating institutions is between $10-25 billion. Institutional investors at this median rage are well-suited for middle-market infrastructure funds, which is where a vast majority of transactions take place (Burnett & Larsen, 2023). There is a greater quantity of infrastructure products available for investors at this scale compared to larger funds that require larger commitments and more specialized infrastructure investors.

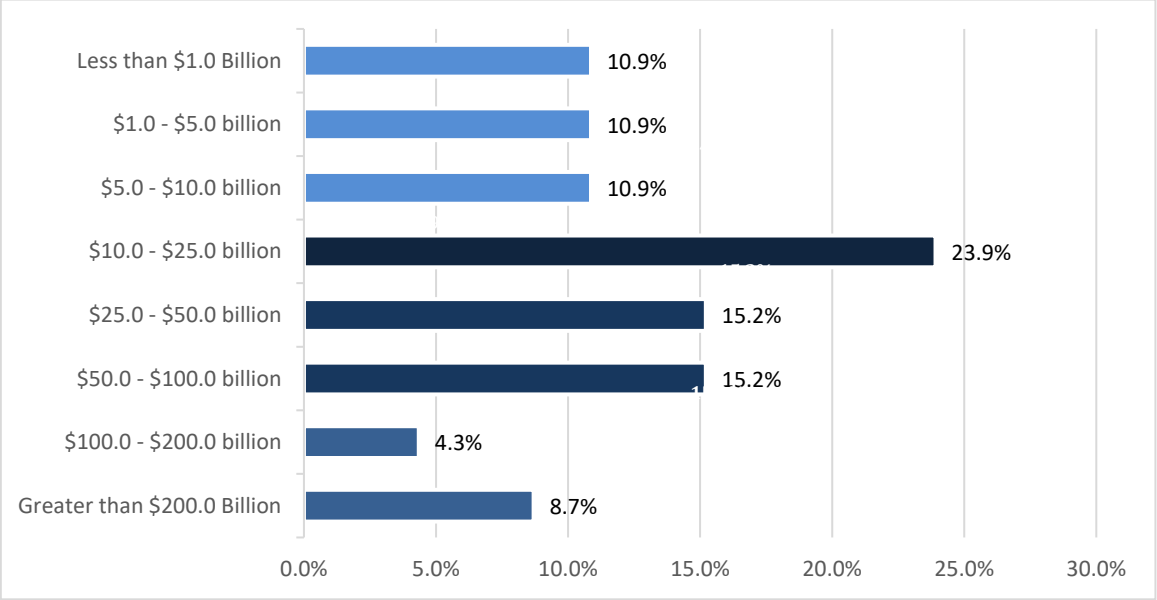

Figure 5; Breakdown of Participants by Size of Institution

In figure 6 we can observe that the majority of participating institutions, 74%, are located in "The Americas", which for these purposes is comprised of the United States of America and Canada. This bias in data towards North America warrants caution when interpreting data, especially as it relates to geographic preferences. For a more robust analysis, increased outreach would be needed to achieve a greater participation rate from Europe, the Middle East and Africa (EMEA) and the Asia-Pacific region.

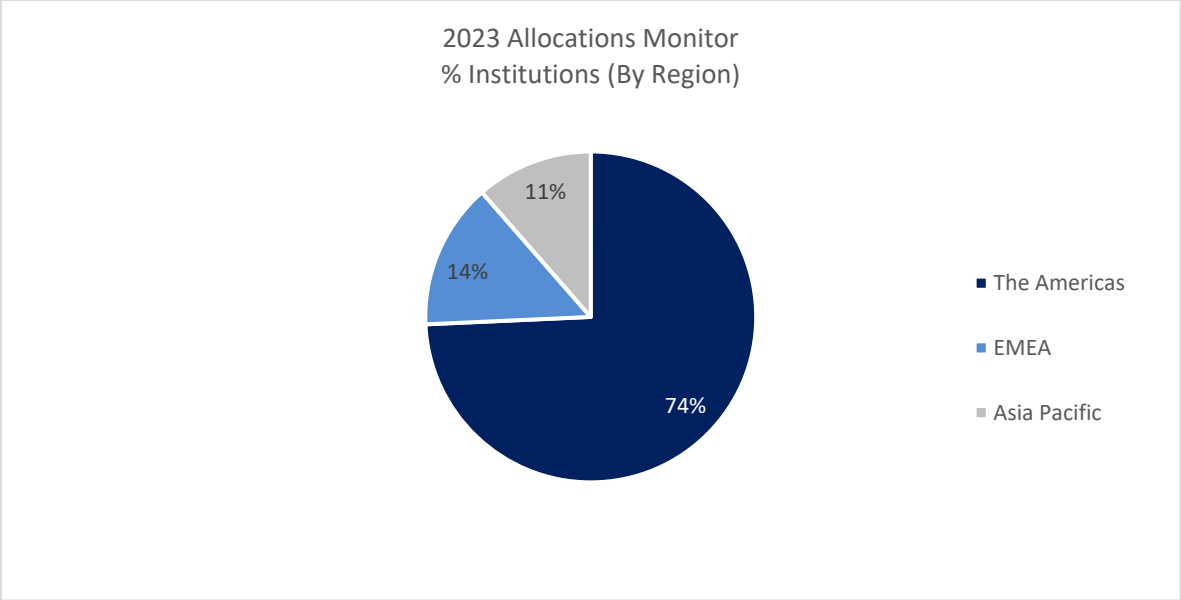

Figure 6; Breakdown of Participants by Location of Institution

Analysis

A main objective of the Monitor is to gauge the magnitude and direction of the gap between current and target allocations in infrastructure. The difference between these two values can hint at projected investment strategies and could help predict potential future investor behavior**.** This can also correlate to expected changes in transaction volumes and liquidity in the infrastructure sector (Hodes Weill, 2023). Target allocations are developed based on institutional investors' long-term investment objectives and their strategic approach to infrastructure as part of their diversified portfolios. Overall, figure 7 illustrates that actual allocations are below target allocations in most cases. It can be said that there is an increased "appetite" for infrastructure products. Therefore, investors are more likely to seek out infrastructure investment opportunities. We can break this down further by type, region, and AUM of institution. Public pensions have one of the highest allocations to infrastructure and are the furthest behind on their target allocations. Globally, across regions,

institutions are consistently under allocated to infrastructure, with Asia-Pacific and EMEA based institutions reporting the highest level of under-allocation. Smaller institutional investors, less than $50bn in total AUM, are under allocated to infrastructure by approximately 16% of their target allocation.

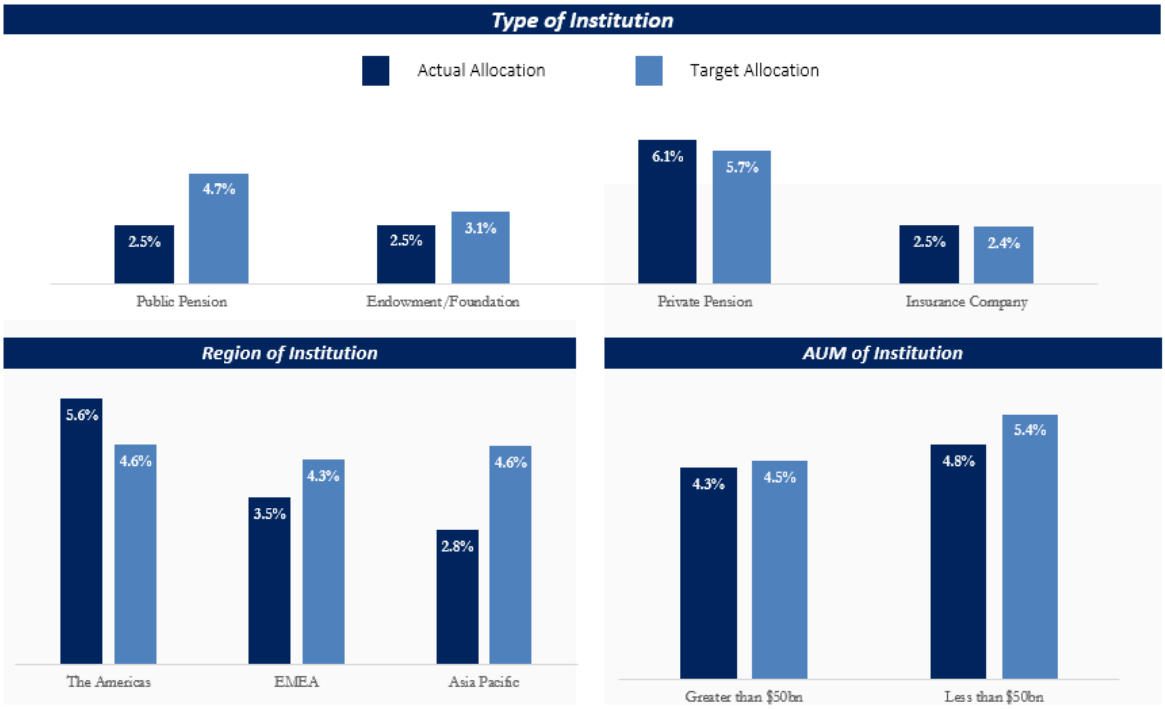

Figure 7; Actual Allocations vs. Target Allocations

In figure 8 we can observe that investor sentiment towards infrastructure is high. Institutional conviction in infrastructure finds itself averaging at 7 on a scale of 1 to 10. This data point will become especially interesting in future editions, as a starting point for a longitudinal study that would examine change in investor sentiment year over year. We can hypothesize that conviction in infrastructure is increasing year over year due to its attractive "recession-proof" characteristics within the current economic environment. By contrast, the 2022 Real Estate Allocations Monitor found that institutional conviction in real estate in

2022 was at 6 over 10 and has been slowing down year over year. Therefore, we can conclude that, within the real asset class, there is a significantly strong investor conviction for infrastructure.

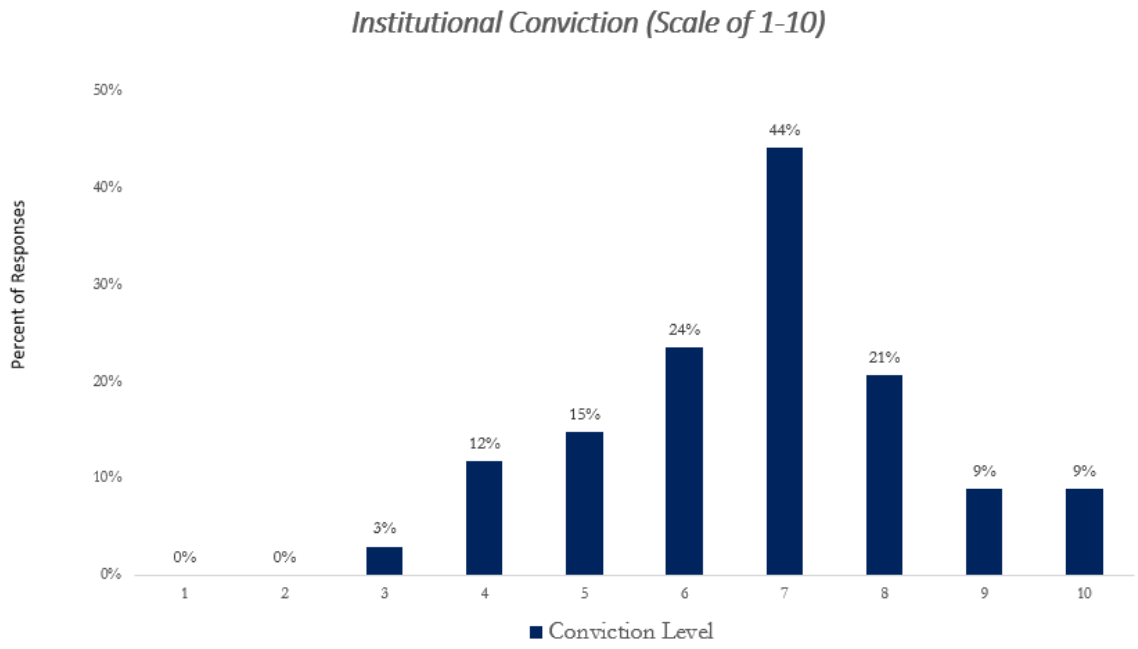

Figure 8; Institutional Conviction Scale

From figure 9 we can deduce that institutional investors in infrastructure prefer strategies with higher risk and higher returns. Core-plus and value-add are the most favored strategies among institutional investors. 78% of institutions report they are actively allocating to value-add [2] investments, compared to 79% allocating to core-plus[3], 51% to core[4], and 28% to super-core[5]. Institutional investors' preference for value-add and core plus strategies may be due to the attractive risk-adjusted return infrastructure offers. Higher risk

[2] Value-Add includes investments that are expected to generate substantial capital appreciation, may have higher risks, and may have high leverage.
[3] Core-Plus includes investments that are expected to generate generally stable and predictable income within a reasonable timeframe, slightly increased levels of risk, and may apply increased leverage.
[4] Core includes investments that are expected to generate stable, predictable income within a reasonable timeframe, moderate risks, and may have some leverage.
[5] Super-Core includes investments characterized by stable, predictable income, low risks and little or no leverage.

investments allow investors to pursue greenfield projects and innovation with higher returns. Fortunately, the comparative risk in infrastructure is lower than in other asset classes. On the other end, super-core investments that provide lower income are now considered less stable than previously assumed, after the effects of the pandemic on air and road transport assets.

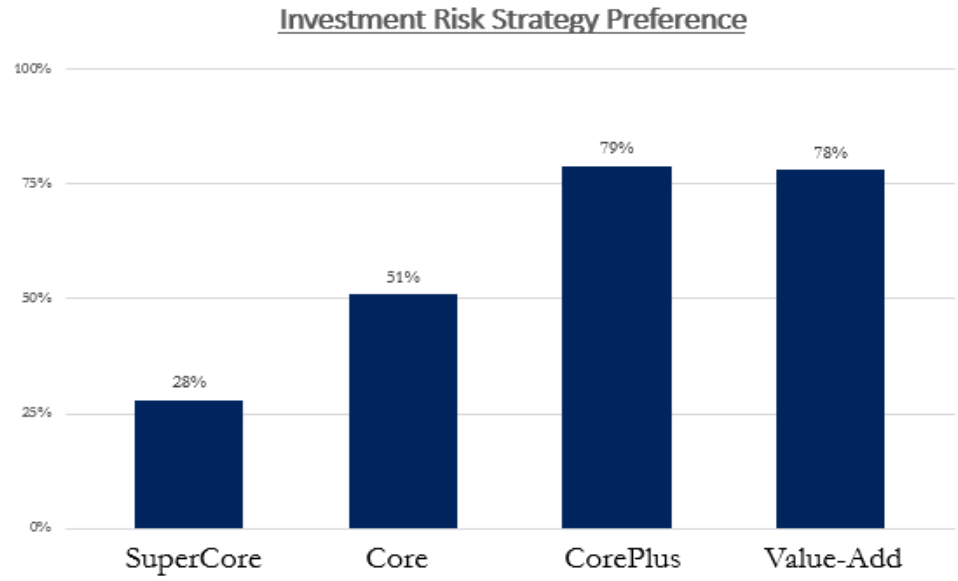

Figure 9; Investment Preferences by Sector

Figure 10 demonstrates that institutional investors plan to maintain and grow allocations to North America more than any other region, followed closely by Europe. This preference may be due to several factors that currently makes North America an attractive geography for investment. Firstly, within a turbulent world economy, a stable currency makes investing in North America increasingly attractive. Secondly, infrastructure as an asset class is only expanding in North America, with more products becoming available in new sectors and resources that are yet to be tapped. Lastly, investments in North America are insulated from political unrest in the European continent and the rest of the world.

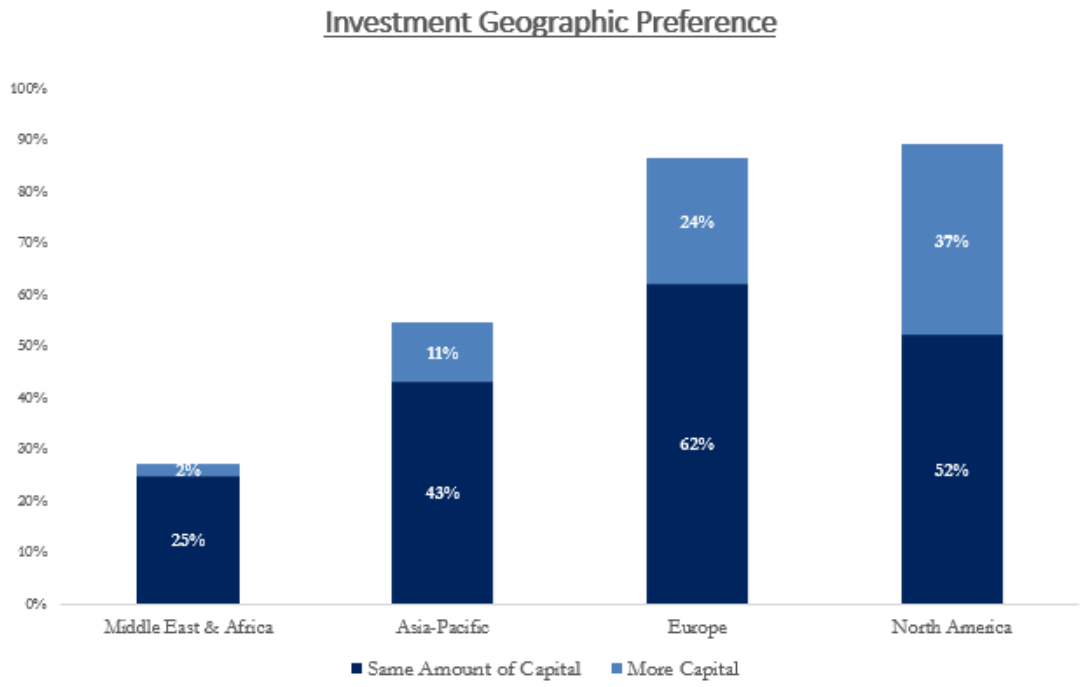

Figure 10; Geographic Preference of Investors

In figure 11 we can observe investment preferences by sector. More than 64% of investors are allocating the same amount of capital to social and transport infrastructure, sectors that are not widely considered hubs of growth and are experiencing stagnation. A significant finding is that allocations to digital infrastructure are expected to increase more than any other sector, at 27%. Digital infrastructure, including data centers, fiber-optic networks, and AI systems, which require enormous amounts of energy and technology are becoming increasingly critical in modern society. Investors want exposure to this growing asset sector and are betting on its growth.

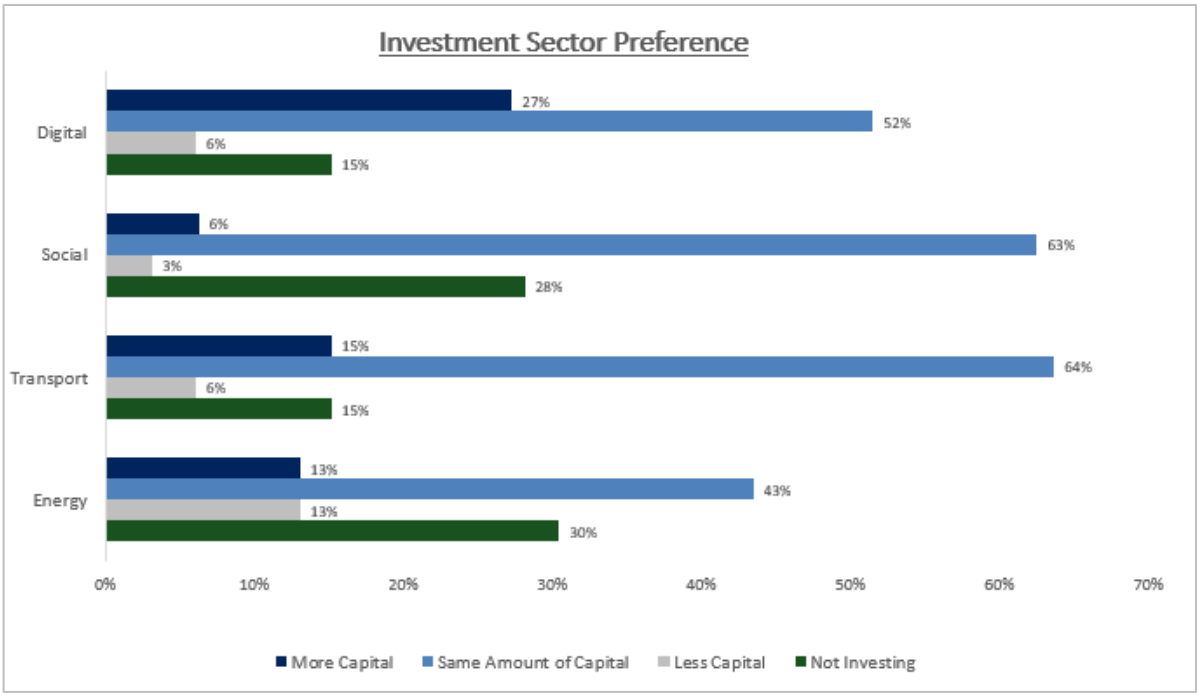

Figure 11; Investment Preferences by Sector

The energy sector can be analyzed by breaking it down into sub-sectors, each with unique characteristics and growth patterns. Figure 12 suggests that investors are increasingly favoring the energy transition. New energy leads at 37% of investors intending to commit more capital, followed by renewables at 30%, and utilities at 23%. While liquid natural gas and oil & gas still feature within institutions' portfolios, investors seek to maintain or decrease their investment in oil & gas, and 43% indicate that they do not actively invest in oil & gas.

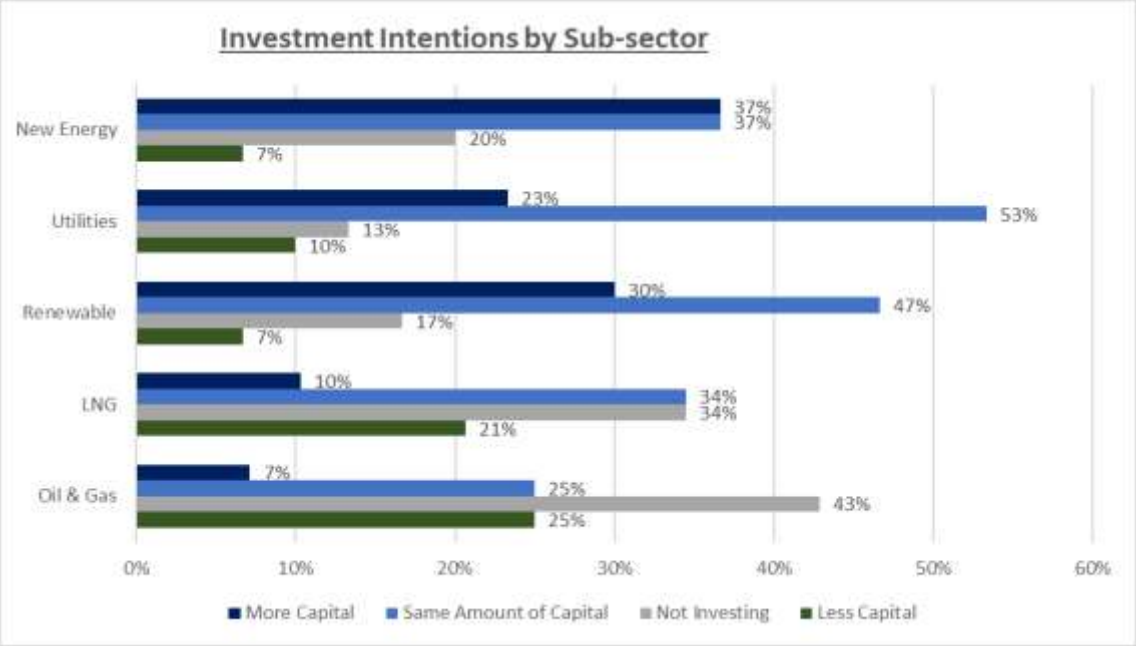

Figure 12; Investment Preferences by Sub-sector: Energy

The above findings are preliminary as data collection and analysis are still ongoing. The process and preliminary findings were presented on April 20th, 2023, to the Cornell Program in Infrastructure Policy Advisory Board and were discussed, verified, and debated by attendees. Outreach efforts seek to increase overall participation and substantial representation from investors in Europe and Asia. Once a meaningful sample-set of institutional investors by size, type, and region is achieved, the final analysis by industry experts and academics will lead into publishing of the final report, known as the "2023 Institutional Infrastructure Allocations Monitor".

LIMITATIONS AND RECOMMENDATIONS

For the inaugural edition of the Institutional Infrastructure Allocations Monitor, the goal of the Real Asset team was to build a documented, replicable, and scalable process that can be referenced for future editions. At the same time, this project was founded on the established methodology that Hodes Weill has developed over multiple iterations of the Institutional Real Estate Allocations Monitor. As the first of a series of annual surveys and reports that will constitute a longitudinal study on institutional infrastructure investment, this project can benefit from a critical review of the methodology implemented, to enhance future research.

The quantity and quality of data collected may have been impacted by several factors during sample selection, survey design, and survey administration. During sample selection, a common challenge was finding the appropriate contact at a given institution to distribute the survey to. For institutions where a point of contact was not already established from previous relationships, we had to deliver a best guess on the indicated outreach contact using Preqin's Investors Advanced Search as a tool. The selection process established focused on contacts that belong to the "Investment Team" category, had an available email, and held a relevant role. Generally, we sought out the best available contact based on their role, beginning with the president, and moving down to the vice-president, investment directors, head of private market/alternative assets/real assets/ infrastructure divisions, managers and principles, chief investment officers, chief executive officers, and finally chief financial officers if there was no other option. Once the surveys were distributed via email, we found that many contacts did not response, which may denote that they may not have been the right contact. In few cases, recipients emailed us directly to direct us to the appropriate contact. Therefore, the low response rate may be due to the email not reaching the most relevant contact or the most inclined individual who could fill out the survey.

Secondly, we can apply a critical lens towards the survey design. The first impression a potential respondent has of the survey is a full 1-page introduction. The cover page provides information on “what the study is about”, “who we are”, “what we will ask you to do”, “your answers will be confidential”, “your participation is voluntary”, objectives of the 2023 Allocations Monitor”, “customized analytics”, “if you have questions”, and the consent form. Although all this information is valuable and conveys professionalism and expertise for the first infrastructure allocations monitor, the extensive length of the introduction can easily deter respondents from clicking onto the next page. This is reflected in the high volume of people who opened the survey but did not progress beyond the first page. Additionally, with the experience of creating the questionnaire, there is an opportunity to streamline and consolidate questions, making the survey more efficient while gathering similar data. Therefore, there is significant room for improvement to obtain a higher completion rate.

Lastly, the timeline for survey distribution was intended to be on an accelerated path and due to be completed in significantly less time than what is allocated for the Real Estate Allocations Monitor. The first delay occurred during the founder’s launch round, when it was deemed necessary to obtain more participants before concluding the round, resulting in a delay of more than three weeks for the broad launch. It is important to note that at this point a team member left company, necessitating an adaptation period and restructuring of responsibilities. Subsequently, when response rate during broad launch initial outreach from Qualtrics was low and bounce rate was high, survey distribution had to be reassessed. The next tool employed was an excel macros to send individualized emails, which yielded a significantly better response rate and provided more insight into the underlying issues. We learned that emails were bouncing due to the following reasons: out-of-office temporarily, contact no longer at the company, bounced by server due to security or other reasons. Although most of these issues cannot be addressed, it gave a better understanding of the reasons behind the low response rate. Moreover, this method allowed for unique interactions

between the research team and investment staff who had unique requests, such as seeing the survey in PDF format, or who personally indicated the reasons they could not participate, such as organizational security restrictions or insufficient infrastructure allocations.

At this time, the findings presented in this report are considered preliminary, as data collection is ongoing. Currently, the small sample size may limit our confidence in the results, especially if we wish to analyze the data by region, AUM, or type of institution. While the preliminary data and findings are useful for a first stress-test with industry and peers, a larger sample size with better representation of certain groups is required to ensure that the findings are representative of institutional investors globally. Hodes Weill and CPIP plan to continue outreach, data analysis, and write the report by mid-summer. Future editions of the Institutional Infrastructure Allocations Monitor can reference the successes and challenges during the deployment of this edition to improve the robustness of the results, the celerity of the process, and ultimately, the impact of the findings for the industry.

CONCLUSION

While the scope and value of infrastructure continues to be explored by both the public and private sectors, we cannot deny the vital role that infrastructure investing plays in the functioning and advancement of society. Private investment in infrastructure has significantly increased in the last decade, with a rise in capital raised and availability of funds. Therefore, it is an opportune moment to initiate research into institutional infrastructure investment trends, aiming to monitor and analyze changing dynamics in the market.

The research draws it methodology from the previous Real Estate Allocations Monitor. However, since this is the inaugural Institutional Infrastructure Allocations Monitor, this professional report provides suggestions on how to improve the sampling method, survey design, and survey administration, aiming for a more effective process and improved outcomes in future iterations.

Preliminary findings indicate a strong investor sentiment towards infrastructure, with intentions to increase infrastructure allocations observed across institution types, regions, and AUM categories. Moreover, there is a notable preference for higher risk-return strategies. Additionally, institutional investors are eager to seize opportunities in emerging sectors by increasing their participation in new/renewable energy and digital infrastructure. These findings are subject to revision as data collection and analysis continues.

In anticipation of the publication of the 2023 Institutional Infrastructure Allocations Monitor, there is a unique opportunity for these findings to be analyzed from a policy lens by the Cornell Program in Infrastructure Policy, to better understand how investors, policymakers, and infrastructure end-users' needs interplay. This research has the potential to serve as a foundation for an annual analysis of trends. Finally, there is an opportunity to explore the data further with distinct perspectives to draw new conclusions and expand interdisciplinary understanding of the field of infrastructure investment.

APPENDIX A: SURVEY

2023 Institutional Infrastructure Allocations Monitor

Start of Block: 1_Introduction

Introduction
Welcome to the *2023 Institutional Infrastructure Allocations Monitor* Investor Survey!

What the study is about
Cornell University's Program in Infrastructure Policy ("**CPIP**") and Hodes Weill & Associates are pleased to launch the first-annual Institutional Infrastructure Allocations Monitor (the "**2023 Infrastructure Allocations Monitor**"). The 2023 Infrastructure Allocations Monitor will assess the role of infrastructure in institutional portfolios, trends in institutional capital flows to the infrastructure asset class, and the impact of institutional allocation trends on the investment management industry on a global basis. The findings of the 2023 Infrastructure Allocations Monitor are intended to serve as a valuable tool for institutional investors in the development of portfolio allocation strategies, and for investment managers in business planning and product development.

Who we are
CPIP, in partnership with Hodes Weill & Associates, is sponsoring the 2023 Institutional Infrastructure Allocations Monitor. CPIP is focused on improving the delivery, maintenance, and operation of physical infrastructure. This is accomplished through dedicated teaching, research, and outreach efforts in infrastructure policy, with a key focus on infrastructure funding and financing. Hodes Weill & Associates is a global real estate, infrastructure, and other real assets advisory boutique with a focus on the investment and funds management industry.

In 2022, Hodes Weill produced its tenth-annual Real Estate Allocations Monitor. 173 institutional investors from 34 countries took part in the survey, representing total assets under management of over US$11 trillion (including over $1.1 trillion invested in real estate). For a copy of the 2022 Real Estate Allocations Monitor report, please click here. Hodes Weill also officially expanded into Infrastructure and other Real Assets in 2021 and is now looking to provide investors with the same valuable insights in that sector, with a specific focus on infrastructure.

What we will ask you to do
We are asking institutional investors to participate in this study by filling out a brief online survey regarding your investment allocations and objectives in infrastructure, which consists

of 21 questions and will take approximately 8-10 minutes to complete.

Your answers will be confidential
The research project is conducted by the faculty and staff of Cornell University, in collaboration with Hodes Weill & Associates. All survey data will be held in confidence by CPIP. No personally identifiable information will be made available to any individual or organization, including Hodes Weill, to protect the privacy of participants. The reports and/or publications produced from the survey data will not include any information that will make it possible to identify your institution or organization.

Your participation is voluntary
We appreciate you taking the time to complete the survey. While we encourage you to answer all questions, please feel free to skip questions that you do not wish to answer or are not applicable.

Objectives of the 2023 Allocations Monitor
We seek a meaningful sample-set of institutional investors by size, type of institution, and geographic location. Your participation will bring about a more comprehensive dataset. The survey will serve as a valuable tool to market participants by providing an assessment of capital flows to the infrastructure asset class, the role of infrastructure in institutions' portfolios and the impact of institutional trends on the investment management industry.

Customized Analytics
Participants will be provided with customized analytics upon request based on the data collected in the 2023 Allocations Monitor.

If you have questions
You can contact the Cornell research team at 607-262-9511 or research_cpip@cornell.edu
Thank you for your participation.

By clicking " I consent, begin this study", I acknowledge that I have read and understood the above consent form and agree to participate in this study in accordance with the terms herein.

End of Block: 1_Introduction

Start of Block: 2_Defining Real Assets

Q1 Do you have a real assets allocation?

- ○ Yes (1)
- ○ No (2)

Display This Question:

If Do you have a real assets allocation? = Yes

JS X→

Q1.2 What sectors are included in your definition of real assets?
Select all that apply

- ☐ Real Estate (1)
- ☐ Infrastructure (2)
- ☐ Natural Resources[1] (3)
- ☐ Other (4) _____

JS ✱

Q2 What percentage of your total real asset allocation is currently invested in infrastructure?
Please insert the current percent invested [e.g. if your answer is 50%, please enter 50].

_____

End of Block: 2_Defining Real Assets

Start of Block: 2.5_Notification

II **The remainder of the questions in the survey are infrastructure focused.**

End of Block: 2.5_Notification

Start of Block: 3_Infrastructure Investments

JS ✱

Q3 What percentage of your total portfolio is currently invested in infrastructure (i.e. current allocation)?
Please insert the current percent invested [e.g. if your answer is 50%, please enter 50].

_____

Q4 In 2022, how did you invest capital in infrastructure?
Select all that apply

- ☐ Direct Investments (1)
- ☐ Closed-End Funds (2)
- ☐ Open-End Funds (3)
- ☐ Separate Accounts (4)
- ☐ Other (5) _____

End of Block: 3_Infrastructure Investments

Start of Block: 4_Target Allocations to Infrastructure

Q5 What is your Target Allocation percentage to infrastructure?

- ○ Target Percent *[e.g. if your answer is 50%, please enter 50]* (1) _____
- ○ N/A (2)

Q5.B If applicable, please indicate the permissible range for your Target Allocation percentage

	Target Percent Lower Range (1)	Target Percent Upper Range (2)

Target Percent Range (1)		

Q6 Do you plan to increase your allocation to infrastructure in the next 12 months?

- ○ Yes (1)
- ○ No (2)

Q7 What was the change in your Target Allocation percentage over the past 12 months?
Please insert the change in percentage [e.g. if your answer is 50%, please enter 50].
If the percentage decreased, please indicate as a negative number [e.g. if your answer is -10%, please enter -10].

- ○ 1 (1) _____
- ○ N/A (2)

C1 Please provide any additional commentary on your target allocation to infrastructure.

_____

_____

_____

End of Block: 4_Target Allocations to Infrastructure

Start of Block: 5_Target and Actual Returns

Q8 What is your long-term annual target return for your infrastructure portfolio allocation?
Please insert the target percent [e.g. if your answer is 50%, please enter 50].

_____

JS *

Q9 What was your actual return for your infrastructure portfolio in:
Please insert the return percentage [e.g. if your answer is 50%, please enter 50].
If value is unavailable, please indicate as N/A [e.g. N/A]
If the percentage decreased, please indicate as a negative number [e.g. if your answer is -10%, please enter -10].

- 2022: (1) _____
- 2021: (2) _____
- 2020: (3) _____
- 2019: (12) _____
- 2018: (13) _____

End of Block: 5_Target and Actual Returns

Start of Block: 6_Infrastructure Investment Intentions

Q10a.Sectors How much capital do you plan to invest in infrastructure in 2023 as compared to 2022 in the following sectors:

	More Capital (1)	Same Amount of Capital (2)	Less Capital (3)	Not Investing (4)
Energy (9)	○	○	○	○
Oil & Gas (1)	○	○	○	○
Liquified Natural Gas (2)	○	○	○	○
Renewable Energy & Storage (3)	○	○	○	○
Electric Utilities & Transmission (4)	○	○	○	○
New Energy Transition (Hydrogen, Carbon Capture, etc) (5)	○	○	○	○
Transportation (6)	○	○	○	○
Digital (7)	○	○	○	○
Social (8)	○	○	○	○
Other (10)	○	○	○	○

Page Break

JS

Q10b. Risk Profiles How much capital do you plan to invest in infrastructure in 2023 as compared to 2022 in the following risk profiles:

	More Capital (1)	Same Amount of Capital (2)	Less Capital (3)	Not Investing (4)
Super Core[1] (1)	○	○	○	○
Core[2] (2)	○	○	○	○
Core+[3] (3)	○	○	○	○
Value-add[4] (4)	○	○	○	○

Page Break

Q10c. Geographies How much capital do you plan to invest in infrastructure in 2023 as compared to 2022 in the following geographies:

	More Capital (1)	Same Amount of Capital (2)	Less Capital (3)	Not Investing (4)
North America (1)	○	○	○	○
Latin America (OECD countries) (2)	○	○	○	○
Europe (OECD countries) (3)	○	○	○	○
Asia-Pacific (OECD countries) (4)	○	○	○	○
Middle East and Africa (OECD countries) (5)	○	○	○	○
Emerging Markets (6)	○	○	○	○

Page Break

Q10d. Strategies How much capital, distinct from the sectors identified in Q10a, do you plan to invest in infrastructure in 2023 as compared to 2022 in the following strategies:

	More Capital (1)	Same Amount of Capital (2)	Less Capital (3)	Not Investing (4)
Listed Infrastructure Equities (1)	○	○	○	○
Infrastructure Debt (2)	○	○	○	○
Infrastructure-adjacent Real Estate (e.g. Data Centers, Cold Storage) (3)	○	○	○	○
Venture-oriented Infrastructure or "Infratech" (4)	○	○	○	○
Other (5)	○	○	○	○

End of Block: 6_Infrastructure Investment Intentions

Start of Block: 7_Conviction Index

X→ X→

Q11 On a scale of 1 to 10, please rate your view on the opportunity to invest in infrastructure, from a risk/return perspective, over the next 12 months?

- ○ 1: Very Unfavorable (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 (7)
- ○ 8 (8)
- ○ 9 (9)
- ○ 10: Very Favorable (10)

Q12 Which of the following risks do you expect to have the greatest impact on infrastructure investment decisions in 2023?
Please rank in order of greatest to least impact.

_____ COVID-19 (1)
_____ Interest rates/ Capital Markets Volatility (2)
_____ Weak economic growth (3)
_____ Geo-political issues (4)
_____ Deflation (5)
_____ Currency market volatility (6)
_____ Data/Information security (7)
_____ Environmental issues (8)
_____ Conditions and quality of existing infrastructure assets (9)
_____ Regulation (10)
_____ Asset valuations (11)
_____ Other (12)

C2 Please provide any commentary on the infrastructure investment environment today.

_____

_____

_____

End of Block: 7_Conviction Index

Start of Block: 8_Third Party Management Trends and ESG & DEI

JS X→

Q13 How likely are you to invest with a first-time or emerging infrastructure fund manager[1]?

- Very unlikely (1)
- Somewhat unlikely (2)
- Undecided (3)
- Somewhat likely (4)
- Very likely (5)

Q14 Do you have a formal policy with respect to "ESG"?

- Yes (1)
- No (2)

X→ X→

Q15 What approaches do you take to integrate ESG and DEI into your investments?
Select all that apply

- ☐ Screening all indirect investments based on specific criteria (e.g. UNPRI signatories, team diversity) (1)
- ☐ Considering ESG outcomes as part of the diligence and investment decision, in addition to financial returns (2)
- ☐ Advocating for the advancement of ESG goals at the portfolio governance level (3)
- ☐ Measuring ESG outcomes using internal metrics and criteria (4)
- ☐ Allocating to green energy strategies (5)
- ☐ Allocating to impact investment strategies (6)
- ☐ Not a key consideration/ No formal integration (7)
- ☐ Other (8) _____

Q16 How important are "ESG" considerations to your investment decision-making process?

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Very important (4)
- ○ Extremely important (5)

End of Block: 8_Third Party Management Trends and ESG & DEI

Start of Block: 9_General Information

Q17 Participant Institution Name

○ Name of Institution (1) _____

JS X→

Q18 Permission to Disclose Name of Institution as a Survey Participant

○ Yes (1)

○ No (2)

Q19 Type of Institution

○ Public Pension (1)

○ Private Pension (2)

○ Insurance Company (3)

○ Sovereign Wealth Fund/Government Agency (4)

○ Endowment/Foundation (5)

○ Family Office (6)

○ Other (7) _____

X→

Q20 Country Location/Headquarters

▼ Afghanistan (1) ... Zimbabwe (1357)

Q21 Total Assets Under Management: Currency

▼ USD (3) ... Other (18)

Display This Question:

If Total Assets Under Management: Currency = Other

Q21 Other Currency

_____

Q21 Total Assets Under Management, in billions
[e.g. if your answer is 500 million, please enter 0.5. If your answer is 1.5 billion, please enter 1.5]

_____

End of Block: 9_General Information

APPENDIX B: IRB EMAIL

Infrastructure Allocations Monitor Survey - IRB

Joyel D Moeller <jdm434@cornell.edu> Thu, Dec 15, 2022 at 12:54 PM
To: Nina Jazmin Borja Marcial <njb94@cornell.edu>

Dear Nina, thanks so much for meeting yesterday. It does not appear from the information you have provided that the work you are conducting meets the definition of a **human subject** and therefore if not human subject research your project would not require and IRB review and approval.

Federal regulations 45 CFR 46 define a human subject as a living individual about whom an investigator (whether professional or student) conducting research

- Obtains information or biospecimens through intervention or interaction with the individual, and uses, studies, or analyzes the information or biospecimens; or
- Obtains, uses, studies, analyzes, or generates identifiable private information or identifiable biospecimens.

Federal regulations define research as a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge.

- A *systematic investigation* is an activity that is planned in advance and that uses data collection and analysis to answer a question.
- *Generalizable knowledge* is information that expands the knowledge base of a scientific discipline or other scholarly field of study.

If the work **does not** meet both the definition of human and research, then IRB oversight is not required. If you would like/need a formal documentation to this regard you can submit in our **New IRB Protocol Management System (RASS-IRB)** and Create an IRB Protocol and receive a formal determination from our office however this is not required by our office if the work is not human subject research.

Many thanks,

Joyel D. Moeller, IRB Administrator, CIP

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APPENDIX C: QUALTRICS OVERVIEW

To: Hodes Weill Infrastructure Allocations Monitor Team
From: Nina Borja
Date: November 30th, 2022
Re: Lessons from Qualtrics XM Basecamp Training

Contents

Types of Questions **1**
Displaying and Hiding Questions **2**
Controlling Questions and Answer Choices **2**
Setting Text and Answer Choices **3**
Handling Longer Surveys **3**

I. Types of Questions

a. Question types we are likely to use:

i. Multiple Choice
- Provides list of choices

ii. Text Entry
- Gathers open-ended feedback

iii. Text/Graphic
- Used to add an introduction or instruction to the survey

iv. Matrix Table
- Used to collect multiple pieces of information, by grouping similar items, in one question.

v. Slider
- Allows respondents to indicate their level of preference with a draggable bar

vi. Form Field
- Gathers standard form information such as name and email

b. Question types we could use:

i. Side by Side
- Asks multiple questions in one condensed table

ii. Net Promoter Score
- 1-10 scale

iii. Timing
- Used to track time and/or limit how long participants spend on a page of the survey

iv. Rank Order
- Allows respondent to determine their order of preference for a list of items

v. Constant Sum

- Collects numeric data and displays a sum to the respondent. Often used for allocation assessments.

c. Other:

i. Pick, Group, and Rank
ii. Graphic Slider
iii. File Upload
iv. Drill Down
v. Heat Map
vi. Hot Spot
vii. Meta Info
viii. Captcha Verification
ix. Highlight

II. Displaying and Hiding Questions

a. Blocks

- Groups similar questions together. This can be used to identify sections.

b. Skip Logic - Hides

- Skips respondents to a later question, passing questions irrelevant to them.

c. Display Logic - Reveals

- Asks follow-up question when a specific response is given, or condition is met. Follow-up can be in page or next page.

III. Controlling Questions and Answer Choices

a. Force Response Validation

- Used to require questions be answered before proceeding. This is recommended for only the most important questions.
- Alternative: allow them the option to respond, but also remind them using the "Request Response" button

b. Validation to Entry

- Character range parameters: ensure that a number is within a specified range
- Content validation: Make sure it is a valid entry, such as an email address

c. Custom Validation

- Customizable. It is suggested to include a custom message to clarify the requirement for the respondent.

b. Randomization

- Used to mitigate order bias. Order in which questions are presented can lead respondents to select a specific answer.
- Choice Randomization:
    a. We can randomize the answer choices within a question. Certain options can be fixed, such as "Other"
    b. We can randomize the order of questions within a block

IV. Setting Text and Answer Choices

a. Piped Text

i. Personalize survey questions by updating question text to reflect previously selected answers. For example, reference the respondent's name throughout the survey. This requires a page break between the question you are piping from and the current question.

b. Default Choices

i. Response will be preselected for the respondent, but they are still able to change it. Can be used in combination with piped text, when the answer has been given previously.

V. Handling Longer Surveys

a. Carry Forward

i. Allows us to take specific answer choices and use them in future questions. This is more convenient than manually copy pasting answer choices.

ii. Carry forward choices: Have the options of a future question be based on the answers of a previous one. For example, respondent is prompted to select 3 things out of a list of 5. In the next question, they are tasked with ordering the 3 options previously selected.

b. Loop & Merge

i. Allows us to take a block of questions and dynamically repeat them for a respondent. This repeats the same set of questions for multiple items.

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