

Full Report

Social Impacts and the Practice of Direct Infrastructure Investment

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Foreword by Scott Miner

Sustainable infrastructure development is at the heart of achieving the United Nations Sustainable Development Goals (SDGs). Achieving the SDGs, which aim to improve conditions for our planet and its people, can only be achieved by executing capital projects such as roads, mass transportation hubs, water treatment and sanitation facilities, administration infrastructure, and more. The more than \$4 trillion in annual investment needed to meet these goals will require a combination of public and private investment. The good news is that sustainable infrastructure is becoming an increasingly attractive asset class to institutional investors, particularly as they focus their capital allocations through the lens of environmental, social, and governance (ESG) criteria.

The key to unlocking significant amounts of institutional capital is for the industry to agree upon and adopt a set of consistent methodologies and metrics for measurement and accounting, a level of standardization like we have in place for equities and fixed income. Guggenheim has been at the forefront of this complicated task.

As part of our work we developed what we call the Sustainability Quotient, which identifies the four characteristics that a sustainable infrastructure project must possess before institutional capital would be committed—financial return, positive social impact, environmental responsibility, and transparent governance. In 2018 we partnered with the Stanford Global Projects Center to identify and analyze infrastructure sustainability standards. This landmark study established a base from which to launch a series of infrastructure sustainability research reports that will be released in the summer of 2020.

The first of these reports, “Social Impacts and the Practice of Direct Infrastructure Investment,” couldn’t be more timely. The global pandemic and protests for social equality have shown us that a capital project’s social impact is of paramount importance. The work of the Fletcher School team from Tufts University—in this Executive Summary and the full report—will make a significant contribution towards identifying tools to measure the social impact of an infrastructure project.

The objective of this paper is to assess the current state of practitioner experience when integrating social impacts and social risks in infrastructure investments. The paper shows that there is still work to be done: While social impact and social risk are important to asset owners and investors, there is little evidence of widespread application of performance standards and models to value social impacts of infrastructure assets. Investors instead find that while universal standards are helpful, well-designed asset-specific or sector-level metrics or Key Performance Indicators (KPIs) are more effective to monitor positive social impacts and reducing social risks.

I want to commend the Fletcher School team from Tufts University, led by Dr. Patrick Schena, for their invaluable contribution towards the goal of establishing sustainable infrastructure investing as an institutional investment asset class.

A handwritten signature in black ink, appearing to read 'Scott Miner', written in a cursive style.

Scott Miner

Chairman of Investments and Global Chief Investment Officer
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Table of Contents

Introduction	6
Social Impacts.....	6
Part I. Purpose, Methods, and Key Findings.....	8
Purpose	8
Methods	8
A Preview of Key Findings	9
Part II. Literature Survey	11
Sustainability and Infrastructure.....	11
Social Risk Versus Social Impact.....	12
Social Risk Integration	12
Social Risk Management	13
Case Materials	14
Part III. Bridging the Investment Process: Measuring and Monitoring Impacts.....	15
Relevant Standards for Assessing Social Impacts for Infrastructure.....	15
Application of Standards in Institutional Infrastructure	18
Extending ESG and Sustainability Reporting Paradigms: Bespoke Tools and KPIs	19
Sector Deep Dive: Investing in Affordable Housing	21
Part IV. Bridging the Investment Process: Channels of Integration	24
The Role of Public Institutions in the Infrastructure Investment Process.....	24
Project Sourcing and Screening	28
Due Diligence: Risk Analysis and Mitigation	29
Operational Elements of Effective Supply Chain Management	31
Valuation Effects of ESG and Impact.....	32
Monitoring and Asset Management	33
Part V. The Role of Indirect Investors in the Stakeholder Chain of Influence	35
General Conclusions and a Path to Future Research	37
A COVID Postscript.....	38
Appendix I: Case Studies.....	39
Appendix II: Standards, Metrics and Tools	43
Appendix III: Standards Selection Methodology	48
Appendix IV: Short-listed Tools, Standards and Metrics	50
Appendix V: List of Infrastructure Investment Managers.....	51
Appendix VI: Analysis of Tools Baseline by Investor Type	52
Selected Bibliography Reviewed for Literature Survey	53
Sustainable Investment.....	53
Social Risk Themes	54
Integration.....	54
Risk Management.....	55
Case Studies	55
Industry White Papers	56

Introduction

The World Economic Forum estimates that the world will face a \$15 T infrastructure gap by 2040.¹ To close this gap requires concerted action across stakeholders sponsoring governments, multilaterals, developers, private investors, and civil society. Their collective goal will be to identify, design, build, *and finance* sustainable projects that increase the stock of global infrastructure assets that are capable of delivering positive environmental, social, and economic impacts with minimal dislocation to local communities and their environments. The sustainability challenge posed by the so-called “infrastructure gap” motivates this study. Its aim is to understand, based on the practice of institutional investors, 1) the nature of *social* impacts arising from infrastructure investments and 2) how they are integrated into and optimized during the investment process and across the entire lifecycle of an infrastructure investment.

Social Impacts

Social impacts from investments in large-scale infrastructure generally accompany assets that service broad communities of users over decades. For example, physical infrastructure (e.g. new roads, bridges, port facilities), economic infrastructure (e.g. electric and telecommunications systems), and health and safety infrastructure (e.g. water resources and waste treatment) strengthen commercial activity, can foster employment, enhance health and welfare, and generally improve the quality of life for users. For certain types of assets, such as renewable energy infrastructure or units of affordable housing, the assets themselves power sustainability. From the perspective of project sponsors, such features are precisely what motivate infrastructure investment, as benefits accrue to all stakeholders, whether sponsors, investors, suppliers, and not least the population of users whose lives are enhanced by, for example, improved respiratory quality, access to transportation, extended electrification, improved telecommunications, or quality water and waste services.

Spillover Effects

In the study of economics, a spillover effect – sometimes also referred to as an “externality” – occurs when impacts from economic activity affect third parties – or more broad communities – without regard for the direct or indirect costs to them. Infrastructure projects have long life cycles, i.e. they take long periods of time to plan, design, and build. After construction they remain in service for decades delivering their designed benefits. Extended project life cycles are consequential. During the operational phase of a project as usage of an asset – e.g. a road, bridge, or power grid – expands and network effects take hold, “positive spillovers” in the form of, for example, improved productivity, higher incomes, greater social inclusion, or lower incidents of illness and disease have the ability to drive material positive impacts through user communities across generations.

The road to a fully operational asset is however neither short, nor straight, but requires that a project pass through extensive planning, design, and build phases before becoming operational. Across all phases, the consequences arising from the project’s construction do not affect all communities or stakeholders equally. In fact, particularly, during early project phases, impacts on affected populations can result in “negative externalities or spillovers” – e.g. physical dislocations, health and safety risks – that can pose significant financial risks to the project, as well

¹ See <https://www.weforum.org/agenda/2019/04/infrastructure-gap-heres-how-to-solve-it/>

as reputational risks to sponsors, developers, and investors, including *their* stakeholders. For clarity, we refer to negative spillover effects as social risks and positive effects as social impacts. However, and importantly, we view these as co-existing and for analytic purposes integral to each other.

Reconciling Social Risks and Social Impacts

The institutional practice of assessing, monitoring, and managing social risks *and* social impacts is not uniform. Central challenges to effectively assessing social risk factors at the project level occur when social risks arise due to unanticipated changes in social conditions resulting from the project itself. Challenges also manifest when risks surface in later phases of a project that are beyond the original planning, analysis, and design horizon. Similarly, while social impacts that result from an asset or its use can be generally anticipated or observed, other positive spillover effects that result from the project may not be anticipated at the planning stage and may well occur as mitigating responses to discrete social risks identified during the screening and due diligence phases. These may take the form of direct payments to local communities or even social infrastructure assets – e.g. schools, community centers – designed into the project to offset or mitigate social risks that arise from the project, its construction, and its subsequent operation. While they are not a motivation for undertaking a project, their role as a tool to manage social risks and to effectively integrate social impacts across the institutional investment process is an important practice feature of institutional infrastructure investment management, fostering social license and potentially contributing directly to investment returns.²

² They do nonetheless contribute directly to measures of social rates of return. See <http://documents.worldbank.org/curated/en/261281468766808543/The-social-rate-of-return-on-infrastructure-investments> and by contrast for social infrastructure https://www.sdabocconi.it/upl/entities/attachment/EIB_Conference%20paper_2_The%20Public%20Value%20Dimension%20of%20Social%20Infrastructure.pdf.

Part I. Purpose, Methods, and Key Findings

Purpose

The nature of infrastructure in terms of scale, utility, and horizon, requires that it be developed with a keen sense of awareness of its consequences – environmental, social, and governance - for affected societies. Its growth has paralleled the steady increase in demand for uncorrelated returns, prompted by severe equity market shocks over the last two decades and accentuated by record low interest rates. Demand for infrastructure as an asset class has also been favorably influenced by the progressive rise in interest in sustainable investing. Incorporating ESG factors into investment decisions has reached a point of near ubiquity among infrastructure managers. While the effects of environmental impacts on investment returns have long been studied, less well covered and understood are successful practices that integrate the social benefits of infrastructure investments with their inherent social risks.

Social impacts and social risks are both endemic to infrastructure. Broadly speaking social impacts represent collateral benefits to communities that extend from the investment. However, these often come at a cost resulting in trade-offs that must be addressed during the investment process. Thus, impacts and risks co-exist in an integrated way in large-scale infrastructure projects and are often challenging to disentangle when making investment decisions. From a practice perspective, there is a material gap in both professional and scholarly writings that is focused on the discrete social impacts of global infrastructure. What types of social impacts and social risks arise from investments in infrastructure projects? How are these identified, monitored, and their effects measured? What practices do institutional investors employ to effectively integrate social impacts and social risks throughout their investment processes? Finally, what practices do they employ to insure their effective integration into the operational phase of their projects?

The purpose of the study therefore is to assess the current state of practitioner experience when integrating social impacts and social risks in infrastructure investments and to highlight successful practices. It is organized as follows. We first present an overview of our methods and offer a high-level summary of several key findings. Section II provides a survey of the prevailing literature on social risks, social impacts, and sustainability in infrastructure. Section III is a detailed analysis of the role of tools, standards, and KPIs in monitoring and measuring impacts. These anchor the investment process while serving several critical analytic, benchmarking, and reporting functions. Section IV offers an analysis of integration strategies and methods, bridging the entire investment process from pre-investment through active asset management. It opens with an analysis of the prominent role played by public and multilateral institutions in deal origination, as well as standards setting. Section V concludes and offers some reflections on future research.

Methods

Our research methods included both primary and secondary source analysis, augmented by practitioner interviews and case studies. Consistent with this broad strategy, we structured our research to include a documentary phase and an interview phase. During the documentary phase we examined institutional practices among both public and private investors to identify and understand linkages between investment criteria and non-financial performance measurement and reporting in direct infrastructure investment programs. The scope of this first phase extended to include relevant standards and reporting frameworks employed by investors, as well as sponsors and developers.

The interview phase of our research consisted of detailed conversations with a cross-section of stakeholders linked to discrete areas of direct infrastructure investment. Contributors included institutional managers, asset owners, service providers, standards developers, and NGOs. The purpose of these interviews was to draw broadly on institutional and professional experiences. Preparation for these meetings was based upon publicly available information. No disclosures from these conversations revealed company confidential information. Nonetheless, we have agreed not to attribute specific quotes to individual contributors and otherwise to anonymize remarks. Subsequent to each interview, details of institutional experience and practices were reviewed, analyzed, then augmented based upon complementary documentary research.

“Impact” Mandates

The community of institutional investors with infrastructure mandates includes both asset managers, as well as asset owners with direct investment programs. To baseline this community, we identified the seventy-five largest institutional managers with infrastructure mandates. (See Appendix V, as well as Section II for details about this sample.) In analyzing this cohort, we identified 12 managers, all members of the Global Impact Investing Network, that in addition to traditional mandates, have mandates in specific sectors – e.g. energy, real estate – that were describe as “impact” (authors’ quotations). These refer to a class of both public and private market investments that are *“made with the intention to generate positive, measurable social and environmental impact alongside a financial return.”*³ The operative features of these strategies are their focus on intentionality and measurable outcomes. Such features have characterized public and multilateral infrastructure strategies for some time. They are experiencing steady growth among institutional investors as stakeholder clients seek to place a greater portion of their holdings into sustainably managed assets, including real assets. These strategies represent an extension of the impact thesis and, where appropriate, will be identified in our analysis through our continued use of the “impact”-in-quotes convention.

A Preview of Key Findings

Without prejudice to our formal conclusions, we preview here several key findings from our study:

First, social risks and social impacts are deeply integrated across the investment process in a continuous fashion that links investment objectives at the pre-investment phase with outcomes at the asset management phase through measurable and reportable metrics.

Second, for institutional managers, standards such as those related to ESG and sustainability, are important. However, for monitoring and measuring social impacts they are augmented by discrete key performance indicators (KPI’s) that permit analysis of a greater degree of asset- and sector-specific detail.

Third, the most effective practices of direct infrastructure investors are grounded in the integration of social risk and social impact across the entire investment process, from sourcing and screening to due diligence and deal structuring and valuation.

³ This definition is offered by the Global Impact Investing Network (GIIN) and is available here: <https://thegiin.org/impact-investing/need-to-know/#what-is-impact-investing>

Fourth, due diligence is the fulcrum of the investment process and crucial for the identification of social risks and the design of mitigation measures that proactively engage local parties to drive positive social impacts to affected communities.

Fifth, KPI's play a central monitoring role in the integration of social risks and social impacts across the investment process. They can also function as knowledge and capacity-building tools and serve as a medium for relationship-building and enhanced manager-client engagement on social impact.

Finally, in important respects, our study reinforces what many institutional investors – including those to whom we spoke – already know and espouse: Social impacts cannot be decoupled from social risks, both are perennial; social license is essential to invest, own, and operate infrastructure assets; and sustainability requires responsibility and accountability to all stakeholders.

Part II. Literature Survey

Our survey of the extant literature was focused on application to infrastructure as an asset class and centered specifically on how social impacts are defined and evaluated during a project's life cycle and across the investment process. A broad survey of the literature on infrastructure investment indicated two dominant themes related to impact: Sustainability and social risk. We structured our review more narrowly to first understand social impact in the broader context of sustainability and sustainable infrastructure. We then traced the literature on social risk to identify relevant themes and core issues. This process was challenged by the broad and eclectic nature of the available literature, which – even in the context of sustainability – we found to be dominated by a focus on risks and negative spillover effects. Our review, therefore, is organized along four broad themes: Sustainability and Infrastructure, Social Risk versus Social Impact, Social Risk Integration, and Social Risk Management. We also include a brief review of case materials. A selected bibliography organized by these four themes, and used to prepare this literature survey, is included in our appendices.

Sustainability and Infrastructure

While there is little debate in the literature regarding the importance of sustainability to infrastructure assets, definitions of sustainable infrastructure vary considerably. The International Institute for Sustainable Development, for example, describes sustainable infrastructure broadly as that developed with “due consideration to economic, social and environmental implications”.⁴ In contrast, the Inter-American Development Bank takes a more focused, yet comprehensive view. It defines sustainable infrastructure as involving projects that are planned, designed, constructed, operated, and decommissioned in a manner to ensure economic, social, and environmental sustainability over their entire life cycle.⁵ Evident in such definitions is the tension between preventing negative impacts from infrastructure development versus ensuring positive outcomes. The University of Toronto's John Robinson's “Squaring the Circle” provides a useful guide to interpretations of ‘sustainability’.⁶ Importantly, he extends the paradigm still further by advocating an approach to sustainability that engages local communities in ways that are more active and integrated.⁷

With respect to social factors specifically, the literature on sustainable infrastructure is fragmented. Much of the academic and professional literature associates social impacts with risk factors posed by infrastructure projects to local communities. The World Bank, for example, uses a poverty and social impact analysis (PSIA) to check distributional effects from a project to develop strategies for ‘the mitigation of possible adverse impacts’. Conversely, a limited practice literature, primarily drawn from institutional investors, that describes their strategies as “impact investing”, define social impacts as discrete positive outcomes that are intentional and integral to their investment decisions. Taking a wider view of social impacts from infrastructure, Zamojska and Prochniak view positive impact as foundational to infrastructure as an asset class. They write: “Only some projects generate a positive rate of return, but all of them should generate positive non-economic impacts and contribute to social gains. Social impact is considered as a consequence or effect of decisions or interventions which lead to

4 See <https://iisd.org/savi/faq/what-is-sustainable-infrastructure-2/>

5 See <https://publications.iadb.org/en/what-sustainable-infrastructure-framework-guide-sustainability-across-project-cycle>

6 See <http://ipidumn.pbworks.com/f/SquaringtheCircleSustainableDevelopment.pdf>

7 As he states further; “This is not to say that sustainability is the inevitable happy outcome of encouraging conversations among stakeholders, nor is it to ignore deep structural issues having to do with power, control, material interest, and access to resources. But it is to suggest that sustainability is necessarily a political act, not a scientific concept.”

development [of the project].”⁸ In analytic terms focused on infrastructure, we find that both the academic and the professional literature, support a representation of social effects as existing on a continuum from negative to positive spillover.

Social Risk Versus Social Impact

The discrete literature on social impact and social risks in infrastructure most generally takes the form of case studies focused on negative spillover with much of this embedded in broader analyses of ESG integration and mitigation (see for example Trop, 2017).⁹ Thus, social impact/risk is rarely addressed independently and is most often discussed together with environmental risks.

Case analyses and academic studies that discuss social effects as risk factors often address the scale of the threat that social risk can pose across the life cycle of a project. For example, Zeng et al document the serious problems that arose from major Chinese infrastructure projects due to social risk management. These included problems that ranged from ecological damage to catastrophic health impacts (Zeng et al, 2015).¹⁰ Such studies illustrate a lack of attention to social responsibility and highlight both the potential problems they engender, as well as the need for engaging stakeholders to address them. A practical conclusion drawn from such studies is the need to perform holistic assessments at the beginning of a project to ensure social risks, especially those most acute locally, are identified and mitigated early in a project’s life cycle. Early and proactive risk assessments and subsequent engagement with community stakeholders are highlighted in the literature as not just risk mitigations, but as a practical means to deepen understanding of the local context and to cultivate social license, while building – versus destroying – value for the local community.¹¹

Social license, i.e. the need for companies and investors to actively manage relationships with community stakeholders (BSR 2016), is a natural extension of social engagement. Maintaining trust with local communities is identified an imperative component of social risk management strategies because once it is lost it is difficult to reestablish, constraining management throughout the lifecycle of the project due to reputational damage. This also necessitates close coordination and monitoring of contractors across the supply chain. Here, the UN Principles for Responsible Investment stresses that monitoring must go beyond compliance with local regulation as suppliers “may operate in countries with less robust legal and regulatory standards than others”.

Social Risk Integration

A common thread in the wider literature focuses on the challenge of integrating ESG factors into investment processes. These most commonly pair environmental and social risks, such as Barclays’ “Environmental and Social Risk Briefing”¹² and the AIIB’s “Environmental and Social Framework”.¹³ The latter describes integration of environmental and social risk integration - including evaluation frameworks - in the context of project assessment models. With respect to social impact and social risks specifically, sources authored by advisory firms and NGOs

8 See <https://jemi.edu.pl/vol-13-issue-4-2017/measuring-the-social-impact-of-infrastructure-projects-the-case-of-gdansk-international-fair-co>

9 See <https://www.mdpi.com/2071-1050/9/6/1076/pdf>

10 See <https://www.sciencedirect.com/science/article/pii/S0263786314001252>

11 See <https://www.bsr.org/en/our-insights/blog-view/building-a-social-license-to-operate-in-the-renewable-energy-sector>

12 See https://home.barclays/content/dam/home-barclays/documents/citizenship/the-way-we-do-business/Oil_And_Gas_Guidance_Note.pdf

13 See https://www.aiib.org/en/policies-strategies/_download/environment-framework/20160226043633542.pdf

provide some guidance on social risk integration, highlighting frameworks to include social risk criteria at various stages of a project's life cycle (see for example The Cadmus Group/WWF, 2019).¹⁴ A number of academic studies expand this discussion either by identifying specific techniques used to integrate social risk criteria into project assessments (Izudin et al, 2011)¹⁵ or highlighting novel practices in particular regions (see Lenferink 2013 in the case of the Netherlands).¹⁶

For completeness, we also considered the financial literature to understand how social risk factors might be integrated into financial models for purposes of pricing and valuation. For example, when valuing real assets, Bos (2014) writing in *CFA Magazine*, suggests adjusting required rates of return for ESG risks by including a premium to the discount rate when valuing project flows.¹⁷ Such approaches are not specific to social risks, nor necessarily to infrastructure per se. In fact, complexities arise when estimating social risk premia due to the possibility of low-probability, high-impact events tied to negative social spillover effects. In the case of investors, including development finance institutions, whose mandate is to foster positive social outcomes, integration and valuation are complicated even further. Here, the technical literature describes methods of social cost-benefit analysis, including the use of social rates of return, to quantify and value of the positive benefits of social impacts. These however are widely considered incompatible for use in analyzing returns to private investors. (Zamojska and Prochniak 2017).

Social Risk Management

Because infrastructure projects are subject to a variety of both financial and operational risks across a project's life cycle, risk management and mitigation strategies are treated in some depth in the literature. However, those focused exclusively on social risk constitute a narrow minority. Multilateral institutions, for example, offer guidance on overall risk management. The World Economic Forum's "Risk Mitigation Instruments in Infrastructure: Gap Assessment" (WEF, 2016) contains an analysis of IFI risk mitigation tools using survey data from infrastructure investors.¹⁸ Consulting firms have published similar reports. McKinsey's "A Risk-Management Approach to a Successful Infrastructure Project" (McKinsey, 2016) is a case in point.¹⁹ The World Bank began implementing the Environmental and Social Framework in 2018, setting out 10 standards, as well as requiring due diligence related to social risks for all projects.²⁰

Key performance indicators, or KPIs, are commonplace as contractual components of public private partnerships. KPIs incorporating sustainability measures are less common and are more often related to environmental impacts versus social impacts. Hueskes et al (2017) writes from the public sector perspective that the lack of socially focused sustainability KPIs is a result of difficulties in measurement and enforcement, which also impedes private sector adoption.²¹

14 See https://www.wwf.ch/sites/default/files/doc-2019-03/WWF_report_3.11.19_FINAL.pdf

15 See <https://ieeexplore.ieee.org/abstract/document/6088857>

16 See <https://doi.org/10.1016/j.ijproman.2012.09.014>.

17 See <https://www.cfainstitute.org/-/media/documents/article/cfa-magazine/2014/cfm-v25-n1-full.ashx>

18 See <https://www.weforum.org/reports/risk-mitigation-instruments-in-infrastructure-gap-assessment>

19 See http://www.sefirrance.fr/images/documents/mckinsey_a_risk_management_approach_to_a_successful_infrastructure_project.pdf

20 See <https://www.worldbank.org/en/projects-operations/environmental-and-social-framework>

21 See <https://www.sciencedirect.com/science/article/pii/S0263786317302557>

While few studies explicitly address social risk alone, some do identify evaluation and mitigation frameworks into which social criteria can be integrated. One common theme in this literature, for example, is that many problems that plague infrastructure projects emanate from poor preliminary project planning, not from technical difficulties (Girardi et al, 2017).²² This is work often undertaken by sponsoring governments. A clear implication here is that improved planning to identify social risks early and to design and implement mitigation strategies can be consequential to managing them over a project's life cycle. A takeaway then is that measuring social impact throughout the life of a project requires preliminary evaluations of existing social baselines, which are often idiosyncratic. Furthermore, the horizon of many projects necessitates continuous monitoring to identify impacts as they arise.

Case Materials

Lastly, we wish to highlight a discrete body of case materials on infrastructure that can offer useful practice lessons on matters related to social risk and social impact. These include formal case analyses, as well as case-based research studies published by academic researchers. They also include less formal case materials prepared by practitioners such as advisory firms, developers and investors. Some academic studies are particularly focused on practices in regions, such as Yuan, et al "Social Risk Factors of Transportation PPP Projects in China: A Sustainable Development Perspective" (2018).²³ Others focus on the impact of specific practices common to a region or country such as Ofori, et al "Attaining Sustainability through Construction Procurement in Singapore" (2006)²⁴ or Lenferink, "Experiences with Inclusiveness in Dutch Infrastructure Projects" (2013).²⁵ Case studies written by advisory firms, multilaterals and developers/investors typically are not peer-reviewed and are designed to showcase individual projects. However, they can provide useful examples of successful social integration strategies and "lessons learned" from the circumstances of individual projects. One such example is the IADB's 2012 case study analysis of the environmental and social impact of the Pasto-Mocoa highway in Colombia, where a consultative process with affected local indigenous communities led to initiatives to create economic benefits by establishing an exclusive mining area to provide materials for the construction and operation of the road and other priority projects.²⁶

Our survey of the prevailing academic and practice literature substantiates that social impact as a theme is integral to global infrastructure investment generally and sustainable infrastructure specifically. Furthermore, we show that social integration and social risk management are identified as intrinsic components of the investment process of infrastructure as an asset class. In addition, a review of the empirical literature accentuates the importance of proactive, early stage evaluations of social baselines to be applied across stages of the investment process, as well as phases of a project's life cycle. This includes the design of strategies to mitigate social risks at the project level. Notwithstanding, our survey analysis further demonstrates that, from a *practice perspective*, there is a material gap in the literature on global infrastructure focused discretely on the positive elements of social impact – either conceptually or empirically. This extends to definitions of infrastructure investment associated with impact investing strategies. Our study seeks to bridge this gap through a focused examination of the discrete components of the investment process for institutional infrastructure that integrates social risk and impact management.

22 See http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-

23 See <https://www.ncbi.nlm.nih.gov/pubmed/29937535>

24 See <https://www.irbnet.de/daten/iconda/CIB1880.pdf>

25 See <https://www.sciencedirect.com/science/article/abs/pii/S0263786312001287>

26 See <https://publications.iadb.org/publications/english/document/Managing-the-Environmental-and-Social-Impacts-of-a-Major-IDB-Financed-Road-Improvement-Project-in-Colombia-The-Case-of-the-Pasto-Mocoa-Highway.pdf>

Part III. Bridging the Investment Process: Measuring and Monitoring Impacts

For infrastructure investments, which often involve public or multilateral participation, attention to environmental, social, and governance (ESG) factors has long been a critical component of the investment process. With greater attention drawn to sustainable infrastructure, accountability has come to mean not only regulatory compliance on matters related to ESG, but more so a rigorous integration of ESG standards. As the role of private institutional investment in infrastructure continues to expand, measurement and reporting frameworks are being more widely adopted. These take the form broadly of ESG standards and tools, more focused sustainability tools, or sector-specific standards and metrics designed to assess material financial impacts. Asset owners and managers interviewed for this study uniformly agreed that effective integration of robust ESG protocols *across the entire investment process* are the foundation of any comprehensive risk management strategy from origination through exit.

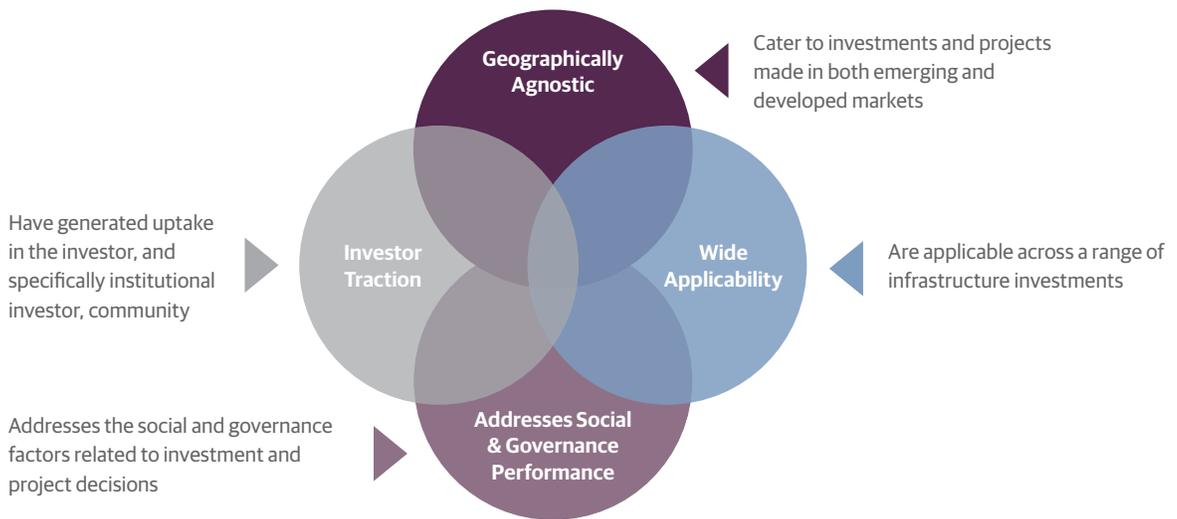
A wide variety of measurement tools, standards, and reporting frameworks have emerged to help investors navigate the complexities of measuring performance. In many cases, private investors, rather than adopting one standard or process, draw on several tools either to develop or to supplement proprietary ESG or sustainability frameworks. The lack of universally accepted ESG or sustainability standards has resulted in uneven adoption and implementation. In this section, we first review the landscape of ESG measurement tools as they apply across the infrastructure investment process. Based on an analysis of seventy-five leading institutional investors in infrastructure, we – second – identify three commonly used tools and evaluate their use within the institutional community. Third, we present and compare differences in the role and function of reporting requirements and frameworks between traditional institutional investors and those infrastructure investors with so-called “impact” mandates. Finally, we discuss and assess the role of proprietary measurement and reporting methodologies as they relate to the investment to process.

Relevant Standards for Assessing Social Impacts for Infrastructure

Beginning with a broad sample of 23 ESG tools listed in Appendix II, our initial task was to screen this sample down to a more focused subset of standards that would be practically applicable to institutional investments in infrastructure based on four basic criteria. These (see Figure 1) required that relevant tools specifically: 1) measure social and governance performance, along with environmental impacts; 2) demonstrate traction within the investor community; 3) be applicable across a range of infrastructure investments; and 4) be geographically agnostic. This list is composed of GRESB, PRI, SuRe, Envision, SASB, Equator Principles, CDC ESG Toolkit* and ISCA*.²⁷

²⁷ Indicates tools that are not geographically agnostic, but may be applicable across geographies

Figure 1: Prioritization Parameters for Tools Included in the Taxonomy



Relative to social and governance factors, environmental effects, such as greenhouse gas emissions, are easier to quantify and compare. As such, there is a large cohort of environmental standards and measurement tools. We focused instead on those tools that *address the social and governance factors* related to investment and project decisions. These tools include metrics or frameworks to assess an investment or project’s effect on a multitude of stakeholders, including employees, contractors, and local communities. They also provide mechanisms for evaluating the quality of governance practices associated with an investment or project, such as metrics around transparency and disclosure, internal policies around diversity and inclusion, and stakeholder engagement.

Our next criterion - investor traction - addresses the extent to which there is *uptake in the investor, and specifically institutional investor, community* for a specific ESG measurement tool. By focusing on uptake among investors, we prioritize comparability of data for better decision-making. Additionally, emphasizing those tools that have garnered significant uptake may filter out tools that require sufficient transaction costs to implement.

We focus on tools that are *applicable across a range of infrastructure assets*, with metrics narrow enough to aid decision-making but broad enough to address infrastructure investments in varied sectors, from water and sanitation to roads and bridges. As ESG reviews have propagated across investor and business communities, the development of bespoke and proprietary measurement tools, designed specifically for one type of investor or investment, have proliferated. We do not consider these tools in our initial evaluation.

Finally, because we are studying broadly institutional investors, we prioritize measurement tools that are *geographically agnostic*, meaning they do not take into account country-specific regulations and so are applicable to investments and projects made in both emerging and developed markets. We do, however, note those tools that, while developed with a certain country or region in mind, may be applicable to other geographies.

Additional Segmentation

Despite, or perhaps because of, the abundance of ESG measurement tools, we found that general uptake of these tools has been somewhat muted across the investor community. This was substantiated through conversations with several standards bodies that revealed limited investor adoption of the standards as one of their key challenges to growth. This issue was partly attributed to a sense of competition with multilateral development banks and development financial institutions, that have their own investment standards. It may also be reasonably attributed to a lack of sufficient evidence that ESG factors are material to asset pricing and investment performance.

To further refine our analysis, we conducted a cross member review of seventy-five institutional infrastructure investors²⁸, in order to gather data on applicability and usage across a broad sample. To do this we narrowed our list of tools further, focusing on those that our documentary research suggested broad applicability to infrastructure investors. These include the UN-supported Principles for Responsible Investment, GRESB (formerly the Global Real Estate Sustainability Benchmark), and SASB (Sustainability Accounting Standards Board).²⁹

PRI (Principles for Responsible Investment)

The UN PRI are a set of six principles for institutional investors to engage ESG practices.³⁰ Signatories who adopt the principles sign on to aspirational objectives with discretion how they implement the principles in their investment practices. All PRI signatories are required to report on their responsible investing practices using the PRI's reporting framework or risk being delisted.³¹ Signatories receive a score from PRI to facilitate internal learning and development and to help focus conversations with asset managers. The PRI³² also provides guidance to investors on how to integrate ESG factors into their investment analysis and decision-making processes, as well as on how to be active owners. With respect to infrastructure investments, both direct and indirect, PRI offers guidance for ESG incorporation from deal origination and screening through due diligence and post-acquisition activities.³³ In order to encourage a globally consistent approach to infrastructure investor due diligence and ESG disclosure by infrastructure managers, the PRI launched the Infrastructure Investor Responsible Investment Due Diligence Questionnaire (*see further below*).

GRESB

GRESB³⁴ is a rating system established in 2009 by a group of pension funds to better understand the ESG performance of their real assets investments. GRESB is a global environmental, social and governance (ESG) benchmark for real assets both at the asset and fund levels. The GRESB asset assessment (both for real estate and infrastructure) evaluates environmental, social, and governance factors across a range of infrastructure investments, structured across seven components: management, policy and disclosure, risks and opportunities,

28 These managers were drawn from the 2019 IPE Real Assets Survey accessed at <https://realassets.ipe.com/top-75-infrastructure-managers-2019-why-big-is-often-best/10032018.article>

29 See Appendix I for more detail

30 <https://www.unpri.org/>

31 Fees range from £469 to £13,943

32 See case studies in Appendix II of PRI pdf

33 <https://www.unpri.org/download?ac=4141>

34 <https://gresb.com/>, formerly the Global Real Estate Sustainability Benchmark

monitoring, stakeholder engagement, performance indicators, and certifications and awards. GRESB subjects assessments to multi-layer validation as a third-party certifier. Its system automates a score based on the data submitted, and GRESB benchmarks that score against the industry. GRESB assessments are tailored to three stages of the investment process - development, management, and performance. While development and management metrics evaluate construction and governance processes and protocols, performance assessments require measurement of project outputs. GRESB is primarily used during the operations phase of projects, though it can also be used during the development phase for greenfield infrastructure projects.

SASB (Sustainability Accounting Standards Board)

SASB is a nonprofit organization founded in 2011 to develop and promote a minimum set of sustainability standards. It currently has developed 77 industry standards, categorized across 11 sectors. Investors implement SASB standards in a variety of ways. Some report against only those criteria that are financially material to an investment. Others report against a wide variety of metrics that encompass both financial and social/environmental materiality. While SASB does not offer certification, its metrics are aligned with numerous sustainability and financial reporting standards, such as the Global Reporting Initiative and the International Integrated Reporting Committee. SASB provides industry-specific, materiality-based standards that guide infrastructure investors in applying best practices in ESG in their investment decisions. Within infrastructure, SASB has standards related to: electric utilities, engineering and construction services, gas utilities, real estate, waste management, and water utilities. Its materiality map³⁵ visually details the financial materiality of each sustainability topic, indicating the degree of risk of each. SASB aligns its standards with those of other industry organizations, including GRESB, to reduce the reporting burden for investors and companies. As SASB's metrics are reported at the company level, they are designed to be applied at the operations stage of an investment and can be used during the due diligence stage of brownfield infrastructure projects. Perhaps the most valuable resource SASB offers, the standards navigator analyses over 4,000 corporate public filings across 77 industries on more than 400 sustainability topics.³⁶

Application of Standards in Institutional Infrastructure

Using our seventy-five manager sample to better understand the uptake of the short-listed tools and standards, as well as their prospective roles and usage, we cross-referenced each against the membership lists of the PRI, GRESB, and SASB. To capture managers with discrete "impact" mandates also included adoption of the Global Impact Investing Network's (GIIN) protocols (see Appendix V for manager-level details). Interesting to note, all seventy-five managers were members of the PRI, which established itself as the most widely adopted by infrastructure investors. In total, sixteen of the 75 firms had adopted SASB, while 12 managers were also members of the GIIN. Seven of the twelve had similarly adopted SASB. Conversely, we found that only five of the leading seventy-five institutional managers were members of GRESB. A review of GRESB's infrastructure members suggests instead heavy uptake among asset owners, who potentially benefit from the type of technical guidance that GRESB provides.

³⁵ <https://materiality.sasb.org/>

³⁶ It costs \$900/year for SASB Alliance Members and \$1200/year for non-members.

Next we attempt to outline the applicability of each of these frameworks to discrete stages of the investment process. For each, we disaggregate the analysis in an attempt to highlight distinctions in the way each set of standards might be integrated by asset owners and asset managers. Despite the apparent overlap among investor adoptees of the PRI, GRESB and SASB, several differences in how institutional investors use these standards remain. (See the table in Appendix IV for details). For example, the PRI is mainly used by asset owners in their investment screening process, to establish ESG expectations during due diligence and to monitor ESG performance throughout the investment period. Relative to the PRI, GRESB is mainly used by asset owners who utilize its ESG data collection, analysis, and reporting tools throughout the investment process, and measure asset or fund performance against a GRESB benchmark. SASB is mainly used by asset managers to identify ESG risks in potential portfolio companies based on SASB's materiality research and by asset owners to evaluate manager ESG performance.

Extending ESG and Sustainability Reporting Paradigms: Bespoke Tools and KPIs

Given the wide range of ESG measurement and reporting tools available and the lack of national or international standards, many institutional investors have developed proprietary tools or incorporated PRI, GRESB, and/or SASB standards into bespoke frameworks that extend measurement and reporting to project-level KPIs. Certainly, KPIs are integral to infrastructure projects and are defined at each stage of a project's life cycle. The full breath of this topic is beyond the scope of the present discussion. Rather we focus here on extensions of the use of ESG – more specifically social - and sustainability standards, including to KPIs.

From a governance perspective, key performance indicators are defined in investment contracts and linked to investment tracking. However, at an operational level they serve several critical functions throughout the investment process. These include as key thresholds or benchmarks during screening and due diligence, as well as measures of both operational performance and risk during the active management phase of the investment process. Meridiam, for example, incorporates KPIs across all phases of the investment process (see Meridiam Case In Appendix I). Providing for effective ESG monitoring allows for more comprehensive risk management. During the operational phase of a project, Meridiam uses a proprietary set of 45 ESG criteria with preconditions before financial close. For the Madagascar Airport project, their Environmental and Social Impact Assessment was done over 1.5 years in partnership with multilaterals and DFIs. After close, Meridiam uses subprojects to promote dialogue and political support with the community, as was evidenced in their Port of Miami and Senergy PV S.A. Projects. As the Meridiam case illustrates, carefully designed KPIs allow institutional investors to monitor and assess risks arising from project execution. They also facilitate tracking discrete social benefits and risks expected from the investment.

For social risk management specifically, investors have combined SASB and GRESB metrics with discrete KPIs, including measuring material ESG risks using SASB's Materiality Map. In order to ensure alignment around KPI monitoring, reporting and feedback, systems are designed into the investment process and across the investment's lifecycle. Project managers, for their part, collect data and monitor social risks, which can be facilitated using GRESB's assessment and analytical tools.

For the subset of institutional investors with "impact" mandates, PRI, GRESB, and SASB tools may be supplemented by those offered by the GIIN. The GIIN's platform, known as IRIS+, enables investors to select from a list of strategic "impact" goals identified in consultation with 400+ stakeholders. In such cases, investments often

are framed around an impact thesis, that establishes the intentionality of the expected impact and how specifically it is to be measured. For each transaction KPI's are employed to define the impact "case" in terms of measurable outputs, as well as outcomes.

An institutional manager with a real asset "impact" mandate interviewed for this study reported using a combination of IRIS+ metrics and GRESB standards, along with proprietary KPIs in a comprehensive system of deal screening, due diligence, deal monitoring, and reporting. In the pre-investment phase, sector-specific IRIS+ measures are used to establish quantifiable output standards for the project. These standards are supplemented by environmental and social measures that define - ex ante - the materiality of sector-specific risk. The standards are applied during due diligence to establish a baseline for risk for the project, where social risks are defined against both a financial thesis, as well as an "impact" thesis. After the investment is made, sector- and project-specific KPIs structured along five key dimensions of "impact" outputs and outcomes are invoked to monitor execution, actively manage the asset, and report both financial and social performance.

A sector "deep dive" into affordable housing serves to illustrate concretely the integrated role of metrics and KPIs across the investment process.

Sector Deep Dive: Investing in Affordable Housing

Beyond evaluating social factors as part of a risk management approach, some investors make strategic investments in certain sectors to proactively generate social impacts, alongside financial return.

The Affordable Housing Sector³⁷

As an infrastructure asset, adequate and safe housing has ripple effects across communities, from enhanced health outcomes to improved learning outcomes in children. However, a severe housing shortage persists globally. According to a McKinsey Global Institute study, by 2025, about 1.6 billion people will be inadequately housed. Currently in the United States, there are only 35 affordable homes for every extremely low income renter household.³⁸ To address this housing deficit by 2025, nearly USD 16 trillion dollars of investment is needed, of which only USD 1 to 3 trillion is expected to come from public sources. Private investment will need to play a significant role in constructing new units and revitalizing derelict buildings. Investments into affordable housing can take many forms, including concessions, bonds, cooperatives, social enterprises, and public private partnerships using SPVs to reduce financial liability.

Confounding Variables to Global Affordable Housing Investments

For an investor with a global portfolio, various national definitions of affordable housing and associated regulatory frameworks present a compliance burden. For example, the UK determines housing affordable based on an evaluation of local income and housing prices, whereas in Australia, a unit is affordable if tenants pay less than 30% of their gross household income on rent. The US compares tenant income to local area median income. Further, differing national guidelines on pricing affects investor return in different national contexts. In Austria, Finland, Slovenia, and Switzerland, social rents can be 80 to 90% of market rents, whereas in Estonia, they can be as low as 15% of market rents.

Measuring the Social Performance of Affordable Housing Investment

In the pre-investment phase, an investor will identify several key social objectives for the investment. In a Global Impact Investing Network (GIIN) survey of 10 investors making 114 unique investments over a one year period through 10 investment funds/vehicles, investors targeted: increased residential stability, increased resources available after housing payments, improved housing quality, increased accessibility of housing services linked to supportive services, and decreased environmental harm. 92% of included investments sought risk-adjusted, market rate returns.

Investors may similarly define KPIs to gauge progress toward impact objectives. A sample selection of metrics as reported by the GIIN is included in the following exhibit.

³⁷ Elements of the box case analysis were drawn from the GIIN study "Evaluating Impact Performance: Housing Investments (2019), accessed here https://thegiin.org/assets/Evaluating%20Impact%20Performance%20Housing_webfile.pdf.

³⁸ Extremely Low Income indicates a household income of 30% or less of area median income

Table 1. Number of Responses to Each Metric

	Metric	Number of Responses
Depth	Greenhouse gas emissions reduced (metric tons)	1
	Type(s) of housing certification	21
	Income distribution of tenants	19
Breadth	Number of new units of new housing	108
	Number of units of preserved or rehabilitated affordable housing	14
	Number of individuals housed	48
	Number of jobs created	2
Duration	Number of years for which housing is expected to remain affordable	117
	Types of housing offered	117
	Tenants turnover rate (%)	3
	Eviction rate (%)	4

Source: GIIIN

Investors track against key metrics that are most material to their objectives. For example, an investor with the objective of increasing residential stability will be concerned with the tenant turnover and eviction rates, but might not focus on greenhouse gas emission reduction. During the screening and due diligence phases of the investment process, an investor will assess the project’s ability to meet defined objectives and KPIs, consistent with national and local regulations.

Measurement and Reporting

Measurement and reporting are key components of active asset management. These are based on the objectives and KPIs designed for the project and facilitate monitoring and risk management. The process is data intensive and can be constrained if access to high-quality data on the project is lacking.

Finally, a small number of institutional investors have designed comprehensive, proprietary “impact” scoring, measurement, and reporting systems. Actis is an institutional investor that spun-out from the CDC Group, the UK government’s development finance institution. The firm’s impact scoring framework belies this legacy. Actis Impact Score (AIS) enables measurement and comparison of different types of impacts across contrasting geographies and sectors. The AIS framework begins by delineating impact intentions and identification of material impacts expected from prospective investments. These individual impact metrics are then assigned a score on the basis of the depth and duration of the impact, the number and nature of people served, the additionality of the investment in creating the impact and lastly whether it was a product of the core activity of the investee or ancillary or peripheral output. The AIS represents the sum of these scores and is used in project screening as a threshold benchmark. Every investment has a target AIS, akin to a target financial return to be achieved by exit. The difference in the AIS scores at the time of the investment vs exit defines the impact multiple for the project.

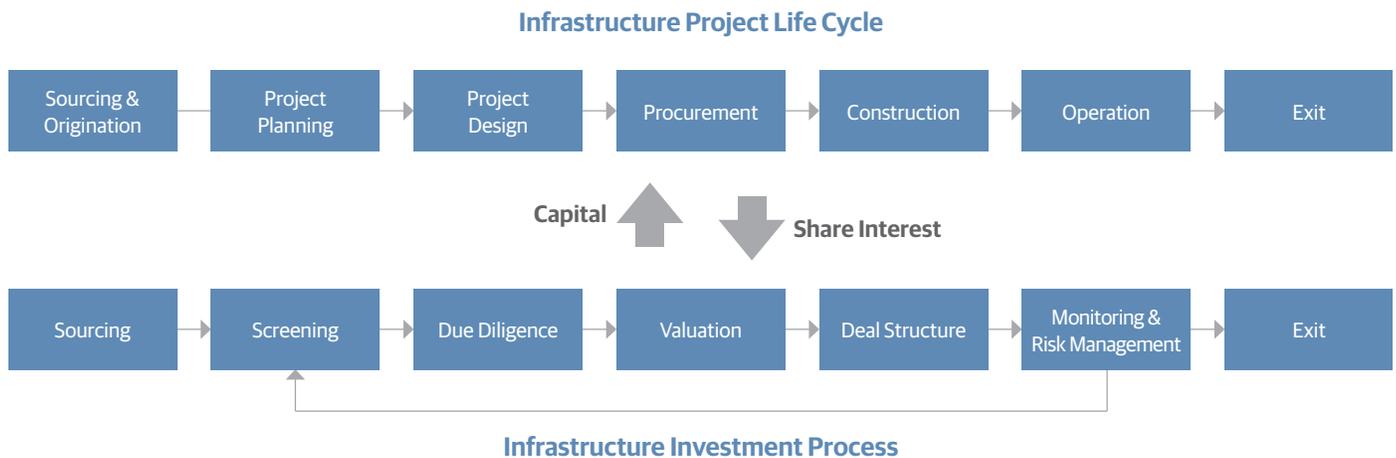
The AIS framework was created primarily to permit limited partners to compare diverse sets of investments on the basis of the impact they would generate. The framework is presented in the familiar language of “impact investing”. Like other measurement tools, it focuses on gross or positive impact, rather than net impact, i.e. it may underestimate unintended risks or negative impacts that arise during the course of a project. Furthermore, the framework emphasizes impact metrics that are quantifiable, and thus potentially understates social risks and impacts that are more qualitative in nature. As per public disclosures, social benefits such as creating employment for the local community are often categorized as ‘ancillary’ rather than ‘core’ benefits of an infrastructure project, which if mismanaged can generate social risks emanating from local stakeholders.

To summarize, we find that while institutional managers have embraced the PRI, uptake of other tools and standards is not widespread. Instead, we find broad use of proprietary tools and metrics that may be supplemented by GRESB or SASB. These include the use of KPIs that serve both as measures of performance and also as benchmarks that are deployed during the investment process to assess social risks and to monitor social impacts. This bridging of the investment process we identify with a continuous flow of information and data that monitors feedback at each stage and, post closing, serves at a baseline for risk and impact management.

Part IV. Bridging the Investment Process: Channels of Integration

We view the investment process for infrastructure assets as a series of “gates” through which an investment opportunity must successfully pass to find its way to an investment committee decision and funding. Our research suggests a functional path that conforms loosely with the life cycle of an infrastructure project. We portray these parallel paths in Figure 2 below. We consider the phases of the investment process as component “channels of integration”, which depict the specific means by which social factors are integrated *at each stage of infrastructure investment decision-making*. This requires taking a composite or stage-based approach to empirically identifying effective practices. In this framework, each stage of the investment process is evaluated independently with respect to the integration of both social risk and social impact.

Figure 2: Channels of Integration



The Role of Public Institutions in the Infrastructure Investment Process

In order to frame an analysis of the integration of social impacts into the investment process of institutional infrastructure, an overview of the influence and current role of public institutions is a necessary point of departure. It is relevant particularly because of the prominent role public and multilateral institutions have traditionally played in deal origination *and* standards setting. As we will show, both of these have consequence for institutional investors when investing subsequent to or alongside public institutions.

National Development Banks

Development banks have long been a fixture in global infrastructure. As the demand for sustainable assets expands, governments are directing their domestically and regionally focused national development banks³⁹ to become increasingly involved in financing sustainable infrastructure. With their capital and broadened mandate, NDBs take various roles in an infrastructure project. As their balance sheet allows, NDBs have historically acted as lenders or co-lenders to infrastructure projects. The provision of concessional lending rates or longer tenures or both is particularly vital in countries with an underdeveloped banking sector. For our purposes, it is here where NDBs can influence the social engagement of an infrastructure developer. For example, KfW, the 2nd largest NDB in the world, has deals proposed to them by host governments. Upon signing an agreement to pursue a project, KfW works with the host government and implementing entities, as well as the project developer, to conduct an analysis of economic, social, cultural, and ecological factors.⁴⁰ As the first capital entrant on a project, KfW has the ability to shape the ESG standards applicable to the project. In its online pre-qualification document that KfW requires of project partners, it asks potential partners to outline strategies for staff and labor that include training for workers, accommodation policies, public health and worker safety programs, worker grievance mechanisms, and strategies for local stakeholder engagement.⁴¹ When required to engage under such baselines, project partners must raise internal standards to access KfW loans.

To respond to a lack of investible projects to fund, NDBs are increasingly moving up in the project cycle and creating project preparation facilities (PPFs) to accelerate the technical, financial, legal and regulatory steps required to advance and conclude investments. They seek to close the gaps between the needs of investors and project developers (Nasslry et al., 2018). Examples of NDBs employing PPFs to meet the infrastructure needs of their country or region include the Fundo de Estruturação de Projetos from Brazil's NDB, BNDES; DBSA's Project Preparation Fund and the DBSA-EIB Project Development and Support Facility. While these PPFs do not specifically discuss overcoming ESG obstacles, they all seek to make projects viable for public and private financial support by meeting financial and legal requirements.

Aside from internal lending policies and PPF policies that may ascribe social standards to infrastructure projects NDBs will fund, NDBs habitually co-invest with multilateral development banks (MDBs) and global public funds which require heightened levels of due diligence. For example, several large NDBs are accredited entities to the Global Climate Fund; the most-significant multilateral funding for green infrastructure since the creation of the Global Environment Facility. To become accredited, NDBs are assessed against basic fiduciary standards, but also whether they have environmental and social safeguards that meet the IFC's Performance Standards. In this respect, even NDBs may need to meet a heightened level of ESG standards themselves before imposing these standards on their clients.

Similar to NDBs, development finance institutions (DFIs) provide capital at various points in the infrastructure project cycle and have different ways of supporting projects. European DFIs reported at the end of 2018 that 49% of

39 For our purposes, national development banks (NDBs) are defined as specialized public finance institutions, common in many developing and industrialized countries. At least 280 NDBs operate in the world, defined as having a minimum 30% government ownership stake and an explicit developmental mandate (Humphrey, 2015). Well-run NDBs have strong relationships with their domestic governments, strong institutional capacities and balance sheets that are reflective of their professional management. These NDBs, usually with explicit government backing, are able to expand their balance sheets beyond their government-provided capital and are able to raise funds on public debt markets. In most cases, NDBs that wish to participate in major infrastructure projects need non-government capital. Examples of these types of NDBs include China Development Bank (CDB), KfW in Germany, and Development Bank of Southern Africa amongst others.

40 See: https://www.kfw-entwicklungsbank.de/PDF/Download-Center/PDF-Dokumente-Flyer/Verfahrensflyer_EN.pdf

41 See KfW pre-qualification documents here: <https://www.kfw-entwicklungsbank.de/International-financing/KfW-Development-Bank/Publications-Videos/Publication-series/Guidelines-and-contracts/>

their portfolios was equity and quasi-equity investments, 48% was loans and only 3% was guarantees. Conversely, US IDFC uses loan guarantees as its predominant mode of financing. While participation through guarantees may appear to undermine the ability US IDFC to impose stringent ESG guidelines on clients, US IDFC's ESG process is quite robust, guided by Environmental and Social Policy Standard, and reported annually.⁴² Moreover, US IDFC project documents are available online and disclose the results of environmental and social assessments. As an example, for a recent \$350 million investment guarantee provided to Invenergy Investment Corporation for a power generation facility in El Salvador, US IDFC required stakeholder engagement plans, contractor management plans, a code of conduct, security policies, a plan to manage the process of land acquisition and construction along the transmission line, and a plan to manage the agreements reached with the local fishing associations. US IDFC also highlighted that project impacts had to be managed in a manner consistent with the IFC's Performance Standards, US IDFC's Environmental and Social Policy Statement, and applicable local laws.

Development Finance Institutions

As mentioned, DFIs are also moving up in the infrastructure project cycle. FMO, FinDev Canada, and Swedfund are all investors in Climate Investor One, a capital-recycling facility mandated to invest in renewable energy infrastructure projects in emerging markets. Climate Investor One consists of a \$30 million Development Fund, \$500 million Construction Equity Fund, and \$500 million Refinancing Fund to be accessed once development and construction risks are eliminated. Climate Investor One's investments follow the fund managers' Responsible Investment Code which is based in the IFC Performance Standards as well as other international standards including the ILO Core Labor Standards, the ILO Basic Terms and Conditions of Work, the UN Guiding Principles on Business and Human Rights, and the UN Global Compact. By working with project developers at the development stage, mitigation strategies can be put in place and social risks that may arise later in the project cycle can be minimized.

In its 2019 annual report, the International Finance Corporation (IFC) reported investing \$19.1 billion, enhanced by \$10.2 billion mobilized from other investors. In context, annual global foreign direct investment flows to developing countries, the IFC's target market, were estimated to be \$671 billion in 2017.⁴³ Despite its small share of global investment flows, the IFC is influential among private and public investors because it has the largest balance sheet and invests across the greatest number of countries. For 2019, almost 12% of commitments from its own account were invested in infrastructure and, at year-end, infrastructure accounted for 19% of the IFC's total portfolio exposure.

One of the ways in which the IFC has established itself as an important project partner is through its ability to provide concessionary finance to projects. Since first being rated in 1989, IFC has been rated triple-A every year by Standard and Poor's and by Moody's; allowing it to issue bonds at the lowest possible rates and so fund projects at relatively lower costs. Alongside the financial advantage that the IFC brings to its investments is the IFC's Performance Standards: a set of requirements that it imposes upon clients to manage the environmental and social risks of a project. The IFC believes its Performance Standards are beneficial to projects to guard against unforeseen risks and negative impacts; improve financial and operational performance; provide reputational capital to projects; and, strengthen a project team's social license to operate.⁴⁴ Importantly, when implemented early in

⁴² See standard here: https://www.dfc.gov/sites/default/files/2019-08/consolidated_esps.pdf and annual report here: https://www.dfc.gov/sites/default/files/media/documents/2018_OPIC_Annual_Policy_Report.pdf

⁴³ Figure from UNCTAD's 2018 World Investment Report here: https://unctad.org/en/PublicationsLibrary/wir2018_overview_en.pdf

⁴⁴ For more on IFC's Environmental and Social Due Diligence Process, see here: <https://www.ifc.org/wps/wcm/connect/aa10e586-be7e-46b8-91c3-cc5e98af6f3d/IFC+Process.pdf?MOD=AJPERES&CVID=jUzk.Hj>

project's life cycle, the Standards inform other capital providers of the general level and rigor of prior due diligence. The Equator Principles, a risk management framework adopted by 104 financial institutions in 38 countries, covering nearly 90% of project financing in emerging markets, are based on the IFC's Performance Standards.

In 2017, the IFC began work to introduce an enhanced due diligence model moving even further beyond ESG risk management to a more robust focus on positive impact outcomes. The Anticipated Impact Measurement & Monitoring (AIMM) Framework adds an extra layer of consideration to the IFC's investment process. Prior to AIMM, projects were subject to the IFC's Development Outcome Tracking System (DOTS) indicator framework through which a project's expected development impact on industry-specific indicators was estimated prior to approval.⁴⁵ Once the project reached early maturity, IFC would evaluate if the project met *ex-ante* indicator expectations.

AIMM provides the IFC with "a more rigorous, evidenced-based, end-to-end approach for achieving its triple bottom line by: selecting projects that maximize development impact, while being socially and environmentally sustainable, and also meeting the IFC's financial performance expectations".⁴⁶ The IFC designed AIMM to be more integrated in the investment process as AIMM will inform the project rating system *ex-ante* and so will drive project selection. As well, under AIMM, results measurements will be conducted at shorter intervals than under DOTS evaluations and allow the IFC to more actively manage projects. Finally, the AIMM framework is expected to provide a rigorous framework from which to conduct *ex-post* evaluations and integrate learnings.

A main driver for the creation and design of AIMM was the IFC's goal to link its impact objectives to market outcomes. This features significantly in the AIMM framework. While AIMM certainly measures environmental and social effects consistently with its Environmental and Social Performance Standards, under AIMM, a project must demonstrate the marginal environmental and social effects to be captured. Essentially, the effects of meeting the IFC's Performance Standards is only claimed under the AIMM framework where a clear counterfactual is established and where the investment intent is to improve environmental or social outcomes. This higher threshold requires IFC project developers to establish an environmental and social baseline based on "business as usual" and demonstrate how the project improves upon the metrics chosen as the baseline.

Taking measurement and reporting one step further, at the World Bank Spring Meetings in April 2019, the IFC launched the Operating Principles for Impact Management. Currently 66 institutions have adopted the Principles, which are intended to bring increased discipline, transparency, and credibility to impact investing. While the Principles do not require adoptees to implement AIMM, the IFC nonetheless views AIMM as a suitable framework on which to base required reporting. To date signatory investors have been non-committal in any decision to modify their impact frameworks to conform to AIMM, in whole or in part.⁴⁷

With expanding balance sheets, NDBs and DFIs will continue to increase their footprint in sustainable infrastructure. Given that DFIs, and the IFC in particular, are standard bearers of ESG due diligence and social impact, it is likely that their practices will continue to disseminate through the infrastructure industry. Although developers and investors may have internal standards, meeting DFI and NDB thresholds of ESG management is a

45 See more information on IFC DOTS Indicator Framework here: <http://documents.worldbank.org/curated/en/287171468326410253/pdf/835210WP0IFC0D00Box382079B-00PUBLI00.pdf#%5B%7B%22num%22%3A66%2C%22gen%22%3A0%7D%2C%7B%22name%22%3A%22XYZ%22%7D%2C33%2C495%2C0%5D>

46 See AIMM General Guidance Note here: <https://www.ifc.org/wps/wcm/connect/45565802-1b1c-4697-a4cf-45d675dd5640/AIMM-General-Guidance-Note-Consultation.pdf?MOD=AJPERES&CVID=mDqGyqA>

47 Interestingly, CDC Group, FMO, and Proparco, three of the largest five bilateral DFIs and signatories to the Operating Principles for Impact Management, are in the process of developing a joint impact model.

requirement for these government-related organizations to invest and, in essence, they can serve as a threshold for ESG considerations, as well as for social impacts, for all investors in a project. While private investors may have the discretion to avoid rigorous social risk and impact screening, co-investing with DFIs and NDBs offers private capital complementary benefits attributable to robust applications of social risk and impact benchmarks.

Project Sourcing and Screening

The infrastructure investment process is significantly differentiated between greenfield and brownfield investments. Infrastructure investors require less time and resources to source and screen infrastructure investments that are already in operation than those that have yet to be developed. Brownfield investments have, in most cases, undergone extensive due diligence, passed detailed ESG assessments, and are generating revenue. While unquestionably not without prevailing ESG or social exposures, more information allows the investor to model potential returns with higher probability. As the global public demand for sustainable greenfield infrastructure increases, the supply of brownfield assets will expand as greenfield investors, including public institutions, recycle assets. An example of this trend is the African Development Bank's Room2Run initiative, a US \$1 billion synthetic securitization of a portfolio of seasoned African Development Bank private sector loans.⁴⁸

Conversely, sourcing and screening large-scale greenfield infrastructure projects requires considerably greater investor resources. Physical infrastructure assets are heterogeneous, due also to differences in the political and social environments in which they operate. In the case of public-private partnerships particularly, during the origination and planning phases, government and multilateral sponsors will often assume the burden of necessary early stage expenses. These frequently include commissioning environmental and social impact assessments.⁴⁹ This affords them the ability to establish a threshold for social risks, which then serves as a baseline for later investor due diligence.

In the case of sponsoring governments, differences in competency, orientation to private investment, and time horizons result in little uniformity of practice. Project preparation facilities (PPFs) and other knowledge platforms such as the Global Infrastructure Hub, PPP Knowledge Lab, and the Sustainable Development Investment Partnership, are increasingly providing necessary resources to governments to enhance their capacity to make projects more attractive to investors. The Global Infrastructure Hub, for example, created the Global Infrastructure Project Pipeline; an expanding digital platform that allows governments to promote public infrastructure projects to a global investor network.⁵⁰

For developers and investors sourcing greenfield projects via PPP, the process can be viewed as dual-tracked with respect to risk. In the first instance, investors and project developers compete for access to projects, which requires adequately pricing the various financial risks associated with a project. The second, more complex track, requires a clear understanding of all related non-financial project risks. These importantly include reputational risks that extend from the developer *and its supply chain*, to direct investors, and finally to indirect investors or limited partners in pooled infrastructure investment funds.

48 See more on Room2Run initiative here: <https://www.afdb.org/en/news-and-events/african-development-bank-and-partners-innovative-room2run-securitization-will-be-a-model-for-global-lenders-18571>

49 See EBRD

50 See more on Global Infrastructure Project Pipeline here: <https://pipeline.gihub.org/>

Non-financial criteria extend to both positive and negative risk factors that provide a body of evidence for investor consideration. Environmental and social risks are both critical targets of early stage screening, as are investor assessments of how such risk factors can be mitigated, adapted, or reconciled. According to institutions interviewed for this study, for greenfield investors with long investment horizons, early stage social risk assessments telescope across the full investment life cycle. These draw heavily on manager and partner experience and expertise to inform due diligence processes that more fully analyze discrete negative impacts and design specific mitigations to offset their affects.

Increasingly, as noted above, early stage screening is informed by investor-specific key performance indicators (KPIs), which are critical components that anchor the investment process. Investors integrate KPIs into screening criteria to serve as a benchmark of non-financial performance throughout the life of the investment. Furthermore, these are later incorporated into project monitoring and reporting dashboards. (See Monitoring and Asset Management below for an extension of this discussion.)

For investors with “impact” mandates, early stage screening is essential to ensure that the project can deliver required impact *outcomes*. As we indicated above, discrete KPIs are designed and used in a manner similar to those for ESG screening. We reiterate here reports among our contributors that pre-due diligence reviews against specific investor KPIs serve as a critical “gate” for a project to proceed to due diligence. These investors were emphatic that the failure of a project to provide confidence of its ability to satisfy required social impact KPIs will result in its rejection at the outset.

Due Diligence: Risk Analysis and Mitigation

Due diligence is the fulcrum of the investment process. It picks up where initial screening leaves off and serves as the departure point to deal structuring and valuation. The scope of due diligence that we consider here is narrowly defined with respect to ESG, and more specifically social risk and social impact. Moreover, the function of due diligence in assessing project risk also includes analysis of potential mitigation strategies and related “investments” to offset negative spillover effects that arise from the project. With respect to “impact” mandates, due diligence is performed in an equally rigorous way in order to substantiate the outcomes expected by undertaking the project. A third element of due diligence relates to contractors, subcontractors, or other components of a project’s supply chain. This was a point of emphasis across all interviewees. We address supply chain due diligence in more detail in the following section and so we defer coverage here.

For institutional investors in infrastructure, the due diligence process is a function of the stage of the underlying project. This will require direct infrastructure investors to evaluate a project either with respect to construction or development risk, as in the case of greenfield projects, or ongoing operational risk as in the case of brownfield projects. In either instance, on matters related to environmental and social risks, investors at either stage will inevitably be required to examine and conduct detailed due diligence based upon prior impact assessments commissioned by project sponsors. Contributors indicated that downstream capital might well be required to rely upon standards imposed by originating sponsors, including, in the case of DFI investors, standards that are more restrictive. According to a manager with deep experience investing in greenfield projects, the burden of due diligence frequently requires detailed review of project documentation, including environmental and social impact assessments (ESIA) that originated with the sponsor. To ensure the integrity and sustainability of permitting, particular attention is given to evaluating these assessments for completeness.

Across our contributors, there was uniformed agreement that due diligence objectives regarding social risk management are to 1) identify potential adverse social consequences arising from the project, 2) isolate, in particular, social risks that have the potential to undermine the social license of project sponsors and developers, 3) design mitigation strategies that *proactively* address social risks identified, and 4) model and price the financial impacts of these mitigations. A specific challenge to conducting due diligence for greenfield investors with long horizons is visibility into social risks that may arise well into the operational stage of the project, i.e. beyond five years. As practical matter, such long-term risk assessments are generally considered infeasible and so not fully incorporated into financial models.

Among the managers interviewed, there was also complete concurrence on the interconnectivity of political and social risks. It was emphasized that linkages were as acute in developed economies as they might be in emerging economies. Political risks were described as arising from project champions within various levels of government who might be vulnerable to reelection, term limits, or other such turnover. Under such conditions, particularly for greenfield investors, direct and proactive community engagement becomes an essential component of social risk mitigation strategies that require strong community endorsement and cooperation from project build to completion.

Once identified, social risks must be acknowledged as a consequence of the project and addressed proactively in a concerted, engaged, and transparent way. All those interviewed stressed the critical need for effective communication early in a project lifecycle, as continuous and open dialogue are critical to establish trust with local communities. Mitigation begins at the design stage and may include direct and indirect forms of compensation to local municipalities or community or civic organizations. The Partners Group attributes the essential need for active mitigation to breakdowns, including under- or mismanagement of community engagement, that can lead to a variety of negative consequences for a project, including denied permits, construction delays, and reputational damage that arise from social disruption and related negative press coverage.⁵¹

In October 2016 the Partners Group invested in Sapphire Wind Farm, a renewable energy project in New South Wales, Australia.⁵² During due diligence, the Partners Group identified the need for community engagement as a material component of their social risk mitigation strategy. The project board of directors formalized the community engagement plan to secure a “social license” for the wind farm to operate. The focus of the project team’s strategy was to engage proactively to ensure full transparency in public support over the project’s 18-month construction period. The Partners Group describes their engagement program as consisting of four pillars. Among these were to partner with contractors to deliver a range of *ancillary projects* during construction, including establishing a \$3.8 million community benefit fund to support longer-term community initiatives. In addition, as part of this engagement program, the wind farm launched a \$5.4 million community co-investment project that allowed members of the affected community to invest in a renewable energy project developed, financed, and managed by a third-party in order to participate in the financial benefits from the sale of renewable energy.

51 See “Exploring the ESG and Impact Spectrum in Infrastructure”, The Partners, Group, February 2019, accessed at https://www.partnersgroup.com/fileadmin/user_upload/Documents/Media_PDFs/20190211_JREI_Exploring_the_ESG_and_impact_spectrum_in_infrastrucutre.pdf

52 Ibid.

Operational Elements of Effective Supply Chain Management

For large scale infrastructure projects, supply chain management presents the most critical sourcing challenge for material, services, *and* capital. The extension of robust ESG analysis and the application of standards and protocols from infrastructure developers and investment managers to suppliers is hampered by persistent challenges to conducting effective supply chain ESG due diligence. Notwithstanding, this burden can be lessened if the scope and completeness of local regulatory oversight over material ESG matters is robust across design, construction, and operation and extends to suppliers and other service providers.

The UNPRI has studied ESG risk in project supply chains and offers tools to its members to design effective supply chain monitoring and management processes to support their specific investment strategy and related assets.⁵³ With respect to infrastructure projects specifically, the PRI identifies ESG risk as embedded horizontally across each phase of a project's life cycle and vertically throughout all levels of the supplier network. Moreover, effective monitoring is also influenced by the skill and experience of project and risk managers tasked with contracting and supplier management. This issue is especially acute for small firms that may not have the capacity to roll out a well-structured ESG risk management program.

The PRI's supply chain ESG management framework is designed around three core process functions: Pre-assessment, due diligence, and ongoing stewardship. In the pre-assessment phase, for example, managers are urged to focus on identifying key risks associated with a sector and/or with specific suppliers. These will inform the manager's overall approach to ESG due diligence. The due diligence track is centered on four critical elements *applied to the supplier*: People, process, policy, and performance. These extend to examining the KPI's that a supplier requires of those providing products and services to it, as well as documenting the capacity of the supplier to gather data and audit compliance.

Actis' engagement with its wholly-owned Indian renewable energy platform, Ostro Energy, serves to illustrate. Actis was prompted by labor issues early on in its investment to mobilize Ostro's executive leadership to address onsite working conditions in its supply chain for both employees *and* sub-contractors. Drawing on IFC and EBRD best practices and working with Actis ESG management, Ostro defined a bespoke labor accommodation standards policy that stabilized labor conditions, including access to safe drinking water and sanitary facilities. Actis argues that the policy and its implementation resulted in lower employee turnover, fewer labor grievances, and higher levels of productivity.⁵⁴ The PRI attributes similar benefits to effective supply chain ESG management, most critically the ability to protect social license to operate, to enhance business continuity, and to reduce project costs through better ESG risk management.⁵⁵

With regard to social risks in developed markets, a manager with deep experience in North American markets called out the importance of extensive, overlapping regulation at both the state/provincial and federal levels to intervene on health and safety issues, labor rights matters, environmental or community impacts, and governance violations at all tiers of project supply chains. From the perspective of supply chain due diligence, supplier track record, depth of experience, prior engagement, and ESG reputational capital were all mentioned as key qualitative criteria when evaluating suppliers. More critical still is the sensitivity of suppliers to the importance of social

⁵³ See <https://www.unpri.org/download?ac=1894>

⁵⁴ See <https://www.act.is/media/2733/empea-ostro-case-study.pdf>

⁵⁵ Op. cit.

license and the long-term effects of negative reputational impacts on project sponsors and *both direct and indirect providers of capital*.

In emerging economies, this link between an ESG-responsible supply chain and social license is in many respects more essential in establishing trust. Landesa is a non-profit organization that works with governments to reform land use rights and advance the sustainable use of land as a cultural resource. Landesa has recently partnered with TMP Systems to develop a unique software tool - The Social License Platform (SLP) - to link businesses and investors with suppliers with local expertise. Through SLP, businesses can identify, engage, and manage experienced, trusted suppliers across a range of projects.

Valuation Effects of ESG and Impact

Valuation effects of social risks and social impacts related to infrastructure assets generally arise in two dimensions. The first of these involves identifying and estimating the *total net direct costs of social risks* on project cash flows, i.e. net of the costs or investment required to mitigate them. The second of these involves valuing "impact" based upon the positive outcomes that result from the project or investment. We address these separately.

The broad literature on valuation modelling for infrastructure is centered on the estimation of project cashflows to providers of capital that are then discounted at the investor's required rate of return. In basic terms, these techniques involve estimating the net present value (NPV) or project returns to an investor and/or its internal rate of return (IRR). These are well-employed for both projects and corporations by both public and private investors and require no further articulation here.⁵⁶ Importantly they are especially suited for use by private sector capital because they offer considerable flexibility in modelling the timing and scale of project revenues and costs, including costs attributable to social risks and/or their mitigation. They also support adjustments to the discount rate - or investor required rate of return - attributable to *both negative and positive spillover effects* that cannot be readily captured in a project's cash flows. Such models also lend themselves to risk analysis through the modelling of alternative operating scenarios and the application of return sensitivity analysis.

In interviews with infrastructure managers related to project valuation models, manager contributors stressed several key points related to their application with respect to social risk specifically. These require that 1) projects be assessed on the basis of total net direct costs, 2) social risks be assessed and estimated as completely as possible over the project's expected life cycle, and 3) the impact of all costs arising from social risks be modelled in terms of lower revenues, higher direct operating costs, *and any additional "offset" investments* required to mitigate social disruption and/or earn the social license to develop and operate the project. Examples of such offset investments might include direct payments to municipalities, community hiring or contracting, or even ancillary project buildouts. These are generally not required to operate the asset, but rather - such as in the construction of a school or community center - are intended to deliver direct and immediate benefits to members of the local community. Such offsets have a direct negative impact on a project's IRR. According to two managers, their impact on a project's IRR tends to be inversely proportional to the scale of a transaction, i.e. the larger the investment, the lower the overall burden on returns. In scale (e.g. projects in excess of \$300-\$400 million), offset costs over an investment effective horizon could range between 50 and 175 basis points of return.

⁵⁶ See for example Tim Killer, Marc Goedhart, and David Wessels, *Valuation: Measuring and Managing the Value of Companies*, 7th edition (John Wiley & Sons, 2020)

Considerably more important to project returns than costs and offset investments are the real effects of project delays on the liquidity and solvency of a project, as well as its overall performance. Because most project costs are structured according to a relatively fixed schedule, impacts or interventions that delay operations and cash inflows will necessarily reduce project returns. For greenfield investors, delays that affect the timing between a commercial and financial close impact the cost of financing or, should delays become protracted, force investor withdrawals. To emphasize the critical lesson learned, one of our manager contributors advised emphatically to: *Identify and cost out mitigations during due diligence and address these proactively as early in the project life cycle as possible.*

An alternative method of return accounting used primarily by public sponsors involves estimating project benefits across multiple streams to calculate a social internal rate of return.⁵⁷ Under such a method, future benefits receive higher weights, which, if using a conventional private market return to discount, might undervalue the socially efficient level of investment in public infrastructure.⁵⁸ Social rates of return are not applicable to private capital.

For institutional investors with a discrete “impact” mandate, there is little evidence of successful practitioner application of models to “value” quantitatively the social impact of infrastructure assets or to apply an attribution model to identify the impact contribution to an asset’s returns.⁵⁹ One clearly identified reason for this is the difficulty in quantifying impacts. A second is the broad diversity of impact outcomes and the practical challenge of efficiently and effectively measuring these. A third is the lack of appropriate benchmarks. As we have highlighted extensively above and reiterate in more detail below, our contributors instead report the general use of KPIs by managers that are often narrowly defined by sector or asset and designed by the manager based on her specific impact objectives.

Monitoring and Asset Management

Post close, active management of social impacts by investors concentrates on risk monitoring. This is especially the case when assessing continuing exposure to social risks emanating directly from the project or residually from agents or suppliers. These include, among others risks, those related to labor conditions and community disruption. Here monitoring frameworks include metrics that take into account the specific characteristics of the investment including a range of additional factors such as geography, physical and regulatory environment, political context, etc. Infrastructure investors who successfully manage social risks generally employ monitoring data to implement practices to improve social outcomes. In the case of CDPQ, its program of community engagement during the construction phase of its Montreal light rail project has been successful in mitigating issues related to traffic detours and rail transportation shutdowns. With respect to brownfield assets, QIC’s experience assuming responsibility for the transportation operations of Northeastern University in Boston began by engagement across multiple stakeholders to improve the project. Their investment in the Port of Brisbane, established new initiatives to train and hire women, typically underrepresented in the maritime industry. (See the CDPQ and QIC cases in Appendix I for further details.)

57 See <http://research.economics.unsw.edu.au/richardholden/assets/social-return-accounting.pdf>

58 See <http://simple.werf.org/simple/media/documents/BCT/stepFourLinks/01A.html>

59 An advancement in this area might be IISD’s Sustainable Asset Valuation model which identifies a range of economic, social, and environmental risks and simulates how these risks will change and affect project cashflows across the asset life cycle; available here: <https://www.iisd.org/project/SAVi-sustainable-asset-valuation>

For infrastructure investors with “impact” mandates, risk monitoring also includes ongoing assessment of risks to the investor’s “impact thesis”. Managers with traditional and “impact” mandates interviewed for this study referenced using standard metrics to design discrete KPI based on the characteristics of their underlying assets.

The integration of KPIs into the investment process in practice facilitates benchmarking both social risk management and impact and advances measuring and reporting. As noted above, this also serves a critical screening function to bring the investment process full circle. Data definition and aggregation are central to this process with managers generally relying on project teams to align data collection and reporting. These might include leveraging GRESB analytical tools and assessment protocols or SASB materiality-focused standards. Like many institutional infrastructure investors, the Partners Group uses an ESG Dashboard for private infrastructure that defines relevant ESG metrics across individual assets to create a portfolio view of ESG performance. ESG metrics that lend themselves to data collection and reporting are used to design discrete KPIs for ESG performance tracking. For others, that are less well suited to quantitative monitoring, Partners Group uses “maturity assessments” to monitor progress toward achieving ESG-related goals. Metrics are designed based upon SASB industry standards as a basis for assessing materiality, then extended to establish an appropriate baseline for ESG risk monitoring and reporting at the asset level. With respect to social risks specifically, the Partners Group private infrastructure ESG dashboard monitors health and safety performance, contractor management, labor standards, and community engagement by tracking respectively lost time-incident rates, contractor management maturity, the number of labor non-compliance incidents, and the number of community complaints.⁶⁰

Earlier we referenced the IFC’s introduction of its AIMM framework for use throughout the investment process to screen, organize due diligence, then actively monitor and manage project-level impacts. The IFC has acknowledged several other approaches in using bespoke standards, metrics and KPIs.⁶¹ One such approach is the Partners Group Ratings Framework, which scores projects based upon the probability and significance of SDG-related impacts. A second is the TPG Rise Fund’s Impact Multiple of Money (IMM). This variable quantifies and monetizes an investment’s net social and environmental impact using quantitative evidence. The IMM was developed with Bridgespan Group for use across a diverse set of assets, including infrastructure. During the screening process, TPG does a qualitative impact assessment of potential investments to filter out deals that are unlikely to pass the IMM hurdle. Companies with a potentially measurable impact proceed through the screening process. TPG uses this IMM approach throughout the investment process, including in due diligence, investment decision-making, and identification of KPIs. The actual IMM at exit is calculated and evaluated relative to expectations at the time of its initial investment.

⁶⁰ See https://www.partnersgroup.com/fileadmin/user_upload/Documents/ESG_and_Corporate_Responsibility_PDFs/20190326_Corporate_Sustainability_Report_2018_Web.pdf

⁶¹ See specifically <https://www.ifc.org/wps/wcm/connect/66e30dce-0cdd-4490-93e4-d5f895c5e3fc/The-Promise-of-Impact-Investing.pdf?MOD=AJPERES>

Part V. The Role of Indirect Investors in the Stakeholder Chain of Influence

While the focus of this research has been discretely on direct investors in infrastructure, our research introduced us to a cross-section of asset owners whose interests as key stakeholders were influential in the investment process of direct investors. Our motivation to include indirect investors – if even in a limited fashion - is to understand the *chains of influence* that extend from owners to managers to projects when the considering social risks and social impacts of an infrastructure investment. We define direct investors as fund managers/general partners, developers, governments, and development finance institutions (DFI)⁶² that deploy their own capital or manage capital for clients under a discrete infrastructure mandate. We count indirect investors among asset owners investing as limited partners (LPs) through pooled investment vehicles, including owners such as pension funds, sovereign wealth funds, university endowments, foundations, and family offices.

The size and scale of infrastructure projects require partnering and risk sharing among investor classes. Direct investors, such as general partners (GPs) of infrastructure funds, engage limited partners under traditional infrastructure mandates, but increasing too those that actively target “impact”, often in specific sectors, e.g. renewal energy, water management, affordable housing. As noted, government funding via multilateral finance institutions, such as the IFC, the Asian Infrastructure Investment Bank, and the Global Infrastructure Facility, also target infrastructure often with similar social intent.

As indirect investors or limited partners, asset owners seek financial returns and even positive social outcomes, while avoiding the social risks or adverse impacts to local populations that may plague infrastructure projects and challenge even experienced managers and GPs. Analogous to investor due diligence on projects, asset owners who contributed to our study describe rigorous manager due diligence protocols structured around detailed questionnaires completed by the investor based on its research of the manager’s policies and practices. An asset owner interviewed for the study highlighted specifically the thoroughness of such due diligence, emphasizing that such engagements frequently take from three to six months to complete, sometimes delaying capital deployment pending a final investment committee decision.

In 2018, with the goal to drive to a globally consistent approach to infrastructure investor due diligence and ESG disclosure by infrastructure managers, the PRI launched a due diligence questionnaire specifically for asset owners and other LPs to evaluate manager approaches to integrating material environmental, social and governance (ESG) factors into their investment practices (Infrastructure Investor Responsible Investment Due Diligence Questionnaire).⁶³ Given the breath of manager participation in PRI initiatives, this tool can serve as a catalyst to drive improved social risk integration in accord with PRI best practices.

Based on our interviews with asset owners, we identify several key criteria for manager selection, beginning with a manager’s understanding, if not adoption, of globally recognized sustainability standards for the asset class. Also important is a manager’s ability to demonstrate experience across multiple large projects and across geographies in

62 DFIs are government-sponsored agencies focused on catalyzing investment into foreign, usually developing, countries. Among the largest bilateral DFIs are the United States’ International Development Finance Corporation (formerly Overseas Private Investment Corporation), the United Kingdom’s CDC Group, FMO of the Netherlands, DEG of Germany, and Proparco of France. Multilateral DFIs are led by the IFC, MIGA, and a variety of EU institutions. These organizations provide equity, loans, guarantees, and trade finance to a variety of projects with the goal to crowd in private capital to spur economic development.

63 See <https://www.unpri.org/infrastructure/responsible-investment-ddq-for-infrastructure-investors-/3587.article>. Our owner interviewees are not PRI members and did not use the Questionnaire.

either or both developed and emerging economies. Most critical is the manager's understanding of, and capacity to manage, social risks and their political extensions across all of the various environments in which they invest. This includes clear evidence of mitigating social risks across project life cycles, attaining impact goals, and maintaining a social license to operate via early, proactive stakeholder engagement. This latter point was accentuated repeatedly and surfaced as the single most determinant factor influencing manager due diligence and impacting manager selection.

A final, less obvious, dynamic of the asset owner/asset manager relationship is linked to capacity. Infrastructure funds may not have more assets under management than their LPs, but they do have specialized knowledge. Limited capacity or scale in allocations to infrastructure inhibit some LPs from fully understanding the project-level risks associated with infrastructure investments or maintaining, tracking, and reporting against metrics or KPIs related to either ESG generally, social risks specifically, or "impact" outcomes discretely. Knowledge sharing between specialist GPs and their investors allows LPs to efficiently allocate their limited capacity, while benefitting from manager frameworks to track social risks and impacts. This extends to industry, sector, and project specific metrics which managers design and track and against which they report to LPs. Importantly, asset owners interviewed for our study advise that manager sector-level expertise, demonstrable use of metrics and reporting frameworks, *and* willingness to educate and train LPs were important differentiators that surface during due diligence and weigh significantly on manager selection decisions.

General Conclusions and a Path to Future Research

At the outset of our study, and throughout, we used the terms social risks and social impacts as co-existing. We found early in the documentary phase of our research, that they are most usually nested in broader research on ESG. When we engaged managers directly, we found that analysis of social risks and social impacts are in fact deeply integrated across the investment process. This occurs in a *continuous* fashion that links investment objectives at the pre-investment phase with outcomes at the asset management phase through measurable and reportable metrics. This data-driven approach, we believe, contributes to process integrity and, importantly, enhances the alignment of manager incentives with discrete impacts, i.e. investment outcomes. This was illustrated through our sector “deep dive” into the affordable housing sector.

Among institutional managers, standards – ESG, sustainability, “impact” – matter. When implemented *and observed in practice*, they could indicate a manager’s commitment to a sustainability agenda. They are often used as screening tools, i.e. during the pre-investment phase, and as monitoring tools post investment. However, and importantly, evidence suggests that, for monitoring and measuring social impacts they are less effective than well-designed asset or sector-level metrics or KPIs.

The most effective practices of direct infrastructure investors are grounded in the integration of social risk and social impact *across the entire investment process*. These enter when sourcing and screening investment opportunities and extend to conducting due diligence and structuring and valuing deals. We found further that it was during due diligence that social risks, in particular, are most identified, where risk mitigation measures are proactively designed with the engagement of affected parties, and where their effects on project timelines and cashflows are analyzed and modelled.

Early in this report we described the nature of social risks and social impacts as “integral’ to each other. The scale and scope of mitigating social risk at the project level can vary significantly. These influence impacts or outcomes particularly when mitigations include project design features or additional investments that drive positive social impacts to affected communities.

For KPI-driven monitoring to underpin the investment process, it must be supported by an extensive information and data collection platform to serve as the foundation for feedback and reporting at each phase of the investment process. An intriguing insight drawn from our work is the role that KPIs can also play as knowledge and capacity-building tools. Asset owners are key stakeholders and will yield increasingly greater influence in the disposition of capital to sustainable assets. Well-designed and communicated monitoring KPIs can serve as a medium for relationship-building and enhanced manager-client engagement on social impact.

As we turn to forward, our research raises a number of important questions that we will leave to future researchers. With respect to ESG and sustainability, will the continuing spread of tools give way to common or “generally-accepted” measures applicable across asset types and sectors? Will self- or central regulatory bodies engage more actively to drive standardization? Are there inherent “diseconomies of scale” in such an exercise that will force greater abstraction, less efficiency, and so less utility, in the application of standards? Importantly, as additional sources of information about an asset’s quality and risk emerge, how will the application of sustainability standards to an investment be “priced”? Will this become a differentiator in the “standards race”? Finally, with respect to social impact, will the current fragmentation persist in the application of standards, or will protocols, such as the IFC’s AIMM framework, emerge and become more widely adopted?

A COVID Postscript

While tragic and painful, the COVID-19 crisis has demonstrated the power of stakeholder partnership to mobilize to solve an extreme – *and unforeseen* – global problem. Critically relevant to this effort has been 1) speed to action and 2) breadth of cooperation across all stakeholder groups – public and private – along with the embrace of civil society. This has required putting aside parochial interests and exposed an existential challenge: How to advance a sustainable, long-term solution to COVID-19 that frees the world from predatory disease.

The challenges posed by the UN's Sustainable Development Goals (SDG) are no less important or pressing. Rather, the COVID crisis is a stark reminder of the very many “crises” that are abstracted into the SDG. Why does it require such destruction to move us beyond this acronym to the profound underlying human costs? Will “this time be different”? The COVID crisis is a call to action that can motivate the post-COVID global community: The world's most pressing challenges are surmountable sustainably by empowered stakeholders who are stronger and more effective working together than apart.

The global infrastructure gap is one such challenge. It has been well-identified for many years yet continues to go unaddressed. Failed public-private partnerships are scattered across this landscape. A post COVID world will require significant capital mobilization in order to jumpstart the global economic engine, repair global supply chains, and slowly resume global flows of goods and services to consumers who will be both relieved, but also cautious. Well-placed investment in public infrastructure is overdue and will be more necessary as streams of economic activity expand and grow.

A central lesson from our research is that building infrastructure sustainability and impactfully rests upon a *natural partnership* that includes government, private suppliers of capital and services, *and an informed public, whose license establishes a necessary bond across stakeholders*. Central to this partnership is 1) genuine, proactive attention to the interests of stakeholders, 2) transparency of both purpose and action, and 3) accountability. The lessons offered by successful partnering to finance and develop large scale, sustainable infrastructure are well-learned. For the immediate, macro-economic stimulus programs can stabilize global supply chains, while bridging economies to sustainable “re-openings”. However, a far more bold and concerted effort is required to bridge the persistent and potentially widening gap between the stock of global infrastructure assets and that are required to support the sustainable growth of the global economy. The time has arrived to embrace the energy and goodwill of public and private sector stakeholders to strengthen the structural foundations of the global economy as it emerges into the post-COVID dawn.

Appendix I: Case Studies

Meridiam

Themes

- 1. ESG as an investment methodology:** Meridiam incorporates ESG criteria through every part of the investment process (from initial screening, to project selection, investment and asset management). This increasingly complete control of ESG component allows comprehensive risk management and movement to optimizing positive effects and improving ESG performance once assets are operationalized.
- 2. ESG Stewardship:** Internalization of ESG criteria goes beyond internal investment processes, to externally impacting stakeholders by sharing best practices, knowledge creation through industry bodies, and partnerships in academia and civil society to further develop the ESG community.

Investment Process Toolkit

In general, Meridiam's ESG analysis of investment opportunities is built around: (a) verification of eligibility of a project against an internal exclusion list (b) ESG framing of the project to determine risk classification, (c) detailed analysis of ESG issues and (d) determining an ESG risk mitigation and monitoring strategy. The ESG issues are reassessed throughout the entire investment process, to eventually ensure that Meridiam can confidently and effectively manage ESG issues arising out of a project.

Investment Evaluation

All pipeline projects undergo initial ESG screening and only those which pass financial, technical *and* ESG requirements pass to the next round. This stage involves a set of 45 ESG criteria which are agnostic of infrastructure type and sector.

Investment Selection

In depth ESG assessment and project optimization which includes:

- a. Site visits, ESG compliance checks, creation of ESG risk management strategy
- b. Involvement and commitment of all consortium members and project partners on ESG through a formal agreement
- c. ESG related preconditions are added to the financial agreement

Case-in-point: South Europe Atlantic High-Speed Rail Line, France: Involvement of a trusted EPC contractor with whom Meridiam had prior engagement was a key contributing factor in the project selection. This enabled Meridiam to advise and assist Lisea (rail infrastructure company delivering the project) to develop and establish ESG linked KPIs. Additionally, this project was the first in France to receive a green label – furthering the high quality of ESG management that Meridiam follows across all its projects.

Case-in-point: Meridiam Infrastructure Asset Fund and investment in the Madagascar Airports: Meridiam worked with strategic partners to identify key institutional, social and political risks of investing in public infrastructure in African countries and as such set a target return of at the minimum 3% above its European and North American funds. While Madagascar was not a part of Meridiam's initial list of African investible countries, eventually, given the social and financial prospects of the investment, the project was undertaken. Some of the key social impacts and risks which were assessed related to training and upskilling the local population (~200) employed at the airports. The Environmental and Social Impact Assessment study was prioritized and done over 1.5 years which enabled them to obtain debt financing from multilaterals and DFIs which are usually contingent on on-going capacity building initiatives of projects.

Investment Management

The ESG themes at this stage are more detailed and dependent upon the type of infrastructure and related issues. Meridiam plays an active and involved role in managing assets.

Meridiam's **Sustainable Development Charter** lays out their core commitments as a long-term investor in public infrastructure, to develop, invest and manage projects that offer a stable return on investment in addition to beneficial outcomes for local communities.

Case-in-point: Port of Miami Tunnel Project, United States: More than 80% of the workers employed in this project were locally from South Florida and during the construction phase Meridiam worked with local organizations to maintain public support for the project (thus mitigating social risks). This is in clear alignment with their charter to prioritize frequent and constructive dialogue with and benefits to local populations and stakeholders.

Case-in-point: Senergy PV S.A. and Ten Merina Ndakhar SA, Senegal: As a part of MIAF's (Meridiam Infrastructure Africa Fund) first investments in power projects in Senegal, Meridiam went beyond these contractual measures of land compensation to construct and operate new schools and creating a fund to support local women entrepreneurs run small businesses. Such social impact activities reduced any community pressure to the projects and created political buy-in and support for the power projects.

CDPQ Infrastructure

Themes

- 1. Investing in Spillover Effects:** A significant portion of CDPQ's infrastructure portfolio centers around Quebec. Social effects in each project intermingle, making the single effects hard to quantify, but also helping generate a portfolio effect in mitigating social risks. The efficiency of local philanthropic causes increases as the community ties are deeper than one single infrastructure project.
- 2. Standardizing Sustainability Across the Industry:** CDPQ is helping create a shared definition of sustainable infrastructure through its Investor Founder Network, group of major institutional investors who conduct joint training programs for senior managers as well as knowledge sharing on standards and disclosure methods.

Investment Process Toolkit

Investment Evaluation

As discussed in the literature review, definitions of sustainable infrastructure are different across stakeholders. CDPQ works with governments to understand their strategic direction for sustainability in order to integrate those objectives into actions within their infrastructure projects.

Investment Selection

Infrastructure projects that don't fit CDPQ's initial ESG requirements may be renegotiated in order to change the project requirements. Subprojects may be removed or added to improve the social outcomes.

Case-in-point: In 2017, CDPQ analyzed a potential investment in an infrastructure project in South America. Decision: After conducting an ESG review, CDPQ decided to exclude certain subprojects with potential negative environmental and social effects.

Investment Management

Case-in-point: CDPQ Infra's first investment, the Montreal Light Rail project is currently underway with construction until 2023. The project utilizes extensive methods to engage the community and mitigate the negative social effects: integration with local transportation, planning mobile applications, holding community open-house events, active social media accounts, transparency measures including technical and noise level reports.

QIC Global Infrastructure

Themes

- 1. Good Governance in Combination with Standards:** Directors representing QIC enforce the inclusion of social risk within the sponsor's internal risk management system as well as reports to the board. QIC actively utilize its board seat to improve company culture.
- 2. Active Engagement:** QIC is involved in a portfolio company's operations to find ways to create positive social spillover effects in the community. In several cases, QIC has started local initiatives within portfolio companies to improve social risk factors.

Investment Process Toolkit

Investment Evaluation

QIC GI considers social factors at each step of an investment, from identification to management, emphasizing understanding how an investment's value and earnings are materially affected. Identifying red flags in a company's

behavior is part of QIC's methodology. If actions can't be taken to adjust an excessive risk-taking culture or improper incentive structures, QIC will not invest.

Investment Selection

Investment teams must utilize standards in building their investment proposals. Besides understanding the risks, active managers must integrate specific measures on how to improve the sustainability of a project through (1) governance frameworks, (2) facilitating stakeholder engagement, (3) setting performance targets and operational metrics, (4) extending reporting to stakeholders outside of investors.

Case-in-point: QIC utilized different stakeholder engagement strategies for key stakeholders in investing in a 50-year concession agreement of a university's mobility services. Formal proactive and joint communication plans were set with the University, as well as efforts to understand the users through marketing studies. The company's management and board members helped facilitate an active stakeholder engagement strategy.

Investment Management

All contractors utilized at each step of a project's lifecycle must have an aligned focus on social risks with QIC. These include workplace health and safety, general safety within its operations for users, risk and compliance, staff engagement and turnover, labor relations, environmental management issues and opportunities, stakeholder engagement. In some cases, QIC actively engages contractors to create positive social effects.

Case-in-point: QIC helped to develop a workforce training program for women at one of its portfolio assets, the Port of Brisbane. The Cadetship Program has brought female representation in the marine team up to 8.6% from 1.9%. This Cadetship Program provides a 24-month paid employment and training program for women seeking to build a career in technical and operational areas within the maritime industry.

Appendix II: Standards, Metrics and Tools

Briefs of Selected Standards and Tools

GRESB

GRESB⁶⁴ is a rating system established in 2009 by a group of pension funds to better understand the ESG performance of their real assets investments. It offers assessments at both the asset and fund levels. The GRESB asset assessment evaluates environmental, social, and governance factors across a range of infrastructure investments, including data infrastructure, energy and water resources, environmental services, network utilities, power generation (excluding renewables), renewable power, social infrastructure, and transport. It is structured across seven components: management, policy and disclosure, risks and opportunities, monitoring, stakeholder engagement, performance indicators, and certifications and awards. The fund assessment includes twelve indicators focused on management and the investment process as they relate to ESG considerations.

Reporting Process: Each year, between April 1st and June 30th, GRESB opens its survey portal to respondents. Once submitted, GRESB subjects its assessments to multi-layer validation as a third-party certifier. Its system automates a score based on the data inputted, and GRESB benchmarks that score against the industry. Typically, an asset operator would be responsible for reporting, though GRESB does not take a view on which party should be responsible for reporting. Therefore, reporting can often fall to other stakeholders, including fund/asset managers, contractors, and investors.

Integration across the infrastructure investment process: GRESB assessments are tailored to three stages of the investment process - development, management, and performance. While development and management metrics evaluate construction and governance processes and protocols, performance assessments require measurement of project outputs. GRESB is primarily used during the operations phase of projects, though it can be used from the development phase for greenfield infrastructure projects.

In 2019, 107 funds and 393 assets reported on GRESB standards, representing USD 135 and 471 billion respectively.⁶⁵

SuRe

SuRe⁶⁶, the Standard for Sustainable and Resilient Infrastructure, is a set of global voluntary sustainability standards from the French investment bank Natixis and Global Infrastructure Basel, a Swiss foundation promoting sustainable infrastructure development and finance. SuRe covers 61 criteria across 14 ESG themes, including resource management, community protection, and management and oversight. SuRe applies to a variety of infrastructure projects and considers each development phase across the life of a project. Different certification levels correspond with different scores on the assessment and certification is dependent on third-party verification.

64 <https://gresb.com/>

65 2019 GRESB Infrastructure Results Snapshot

66 <https://sure-standard.org/>

Reporting Process: To receive SuRe certification at the bronze, silver, or gold levels, companies must register with the SuRe system, apply for third-party certification, and meet the appropriate requirements for each certification award. Certificates are only awarded after a successful on-site inspection.

Integration across the investment process: With metrics on both management commitments and process as well as performance of completed actions, SuRe is designed to be applied across the entire infrastructure investment lifecycle. In project design and development phases, reports will skew toward commitments; in the operations and decommissioning phases, project reports will skew toward performance.

Envision

Envision⁶⁷ is a sustainability and resilience framework from the Institute for Sustainable Infrastructure and the Zofnass Program for Sustainable Infrastructure at the Harvard University Graduate School of Design. It includes 64 performance indicators divided into five categories: quality of life, leadership, resource allocation, natural world, and climate and resilience. The first two categories, quality of life and leadership, represent social and governance factors related to infrastructure investments. Such factors address the infrastructure project's effects on local communities and the degree to which project managers incorporate sustainability factors into the project design. Envision offers third-party verification of a project's sustainability assessment both in the design and post-construction phases.

Reporting Process: Envision's certification awards are based on the earned proportion of 1,000 total available credits, with 50% denoting the highest award. If certain credits are not applicable to a project, then the total number of points is reduced from 1,000 with 50% attainment remaining the threshold for the highest award. Reporting responsibility is typically conferred to the infrastructure owner, though Envision can also be used by contractors, community members, and regulators.

Integration across the investment process: Envision can be integrated at any stage of the investment process, from design through operations and maintenance. The tool offers different resources for early integration as well as post-construction evaluation, lending itself to both greenfield and brownfield projects. However, its value-add increases the earlier it is applied in the investment process, as adjustments can be made more easily and at lower cost earlier in a project's design or construction phases.

SASB

The Sustainability Accounting Standards Board⁶⁸ is a nonprofit organization founded in 2011 to develop and promote a minimum set of sustainability standards. As of today, it has developed 77 industry standards, categorized across 11 sectors. Within infrastructure, SASB has standards related to: electric utilities, engineering and construction services, gas utilities, real estate, waste management, and water utilities. Its materiality map⁶⁹ visually details the financial materiality of each sustainability topic, denoting to investors the degree of risk each issue brings. SASB aligns its standards with those of other industry organizations, including GRESB, to reduce the reporting burden for investors and companies. SASB also publishes engagement guides for each industry to provide sustainability accounting guidance.

⁶⁷ <https://sustainableinfrastructure.org/envision/overview-of-envision/>

⁶⁸ Sustainability Accounting Standards Board (SASB)

⁶⁹ <https://materiality.sasb.org/>

Reporting Process: SASB's framework is designed to be tailored to specific investment and reporting needs. SASB guidance resources recommend determining the purpose and audience of sustainability reporting, then selecting the metrics that apply to overarching performance goals. For some investors, this will mean reporting against only those criteria that are financially material to an investment. For others, it will mean reporting against a wide variety of metrics that encompass both financial and social/environmentally materiality. While SASB does not offer certification, its metrics are aligned with numerous sustainability and financial reporting standards, such as the Global Reporting Initiative and the International Integrated Reporting Committee.

Integration across the investment process: As SASB's metrics are reported at the company level, they are designed to be applied at the operations stage of an investment and can be used during the due diligence stage of brownfield infrastructure projects.

Equator Principles

The Equator Principles⁷⁰ are a social and environmental risk management framework adopted by financial institutions for monitoring and diligence across four financial products: 1) project finance advisory services 2) project finance 3) project-related corporate loans and 4) bridge loans. They have been adopted by 102 financial institutions in 38 countries, and they set out a minimum requirement of due diligence for engagement in project finance and related activities. The Principles include requirements such as review and categorization of potential projects based on the IFC's environmental and social categorization process, the identification of applicable assessment standards, the development of a plan to manage social and environmental factors, and strategies for independent monitoring and reporting.

Reporting Process: The fourth edition of the Equator Principles encompass 10 principles that projects must satisfy before an Equator Principles Financial Institution can extend a loan to them.

The principles fall into the following categories:

1. Review and Categorization
2. Environmental and Social Assessment
3. Applicable Environmental and Social Standards
4. Environmental and Social Management System and Equator Principles Action Plan
5. Stakeholder Engagement
6. Grievance Mechanism
7. Independent Review
8. Covenants
9. Independent Monitoring and Reporting
10. Reporting and Transparency

Integration across the investment process: The Equator Principles apply only to infrastructure loans, specifically during the sourcing and due diligence phases.

⁷⁰ The Equator Principles - Environmental and social risk management for projects

CDC ESG Toolkit

The CDC ESG Toolkit⁷¹ is a repository of resources for integrating ESG considerations into the investment process from the UK's development finance institution. It includes guidance for private equity funds, sector profiles, and an overview of environmental social topics material to the investment process. It has guidance relevant to six stages of the investment process: screening and categorization, due diligence, investment decision, investment agreement, ownership and monitoring, and exit. It also provides resources and guidance specifically for fund managers. Within its infrastructure sector profile, the CDC ESG Toolkit outlines key environmental, social, and business integrity considerations, as well as a sector risk overview and the identification of applicable standards for measuring and monitoring ESG factors.

Reporting Process: The CDC's ESG Toolkit is a compendium of resources that provide guidance to emerging market fund managers. As such, the reporting process is subject to agreements between general partners and limited partners. The toolkit provides recommendations for how to integrate ESG requirements into investment agreements.

Integration across the investment process: The toolkit has resources that apply across all stages of the investment process. One element of the toolkit is guidance on how to integrate ESG factors across the investment process, from screening through exit.⁷²

Infrastructure Sustainability Council of Australia (ISCA)

ISCA⁷³ has developed an infrastructure sustainability rating system developed for use in Australia and New Zealand among stakeholders across the infrastructure investment value chain (including developers, investors, and public authorities). The ISCA aims to measure the "quadruple bottom line" of social, governance, environmental, and economic impact, and disaggregates its metrics within these four categories. Ratings are earned at three distinct points in the infrastructure project cycle: Design (at the end of the planning and design phase), As Built (at the end of construction), and Operation (during operations). 63 Certified Ratings were completed by last available data. For each metric, projects can achieve a Level 1, Level 2, or Level 3 rating (including sub-ratings such as 1.1, 1.2, etc).

Reporting Process: The reporting process for the IS ratings breaks down into four stages: 1) registration 2) assessment 3) verification 4) certification.⁷⁴ ISCA requires that the rating scheme be applied by a registered Infrastructure Sustainability Accredited Professional (ISAP), and ISCA offers an ISAP training and certification process. Once an infrastructure project is registered, the project team is assigned a case manager who primarily supports the assessment stage of the reporting process. Verification is undertaken by an independent third-party, and ISCA certifies projects and provides them with a rating based on the overall sustainability score.

Integration across the investment process: Though the IS rating tool can apply to built infrastructure projects, it is also applicable to the planning, design, construction, and operational phases of infrastructure investments.

71 <https://toolkit.cdcgroup.com/>

72 <https://assets.cdcgroup.com/wp-content/uploads/2018/12/21165756/1.-Investment-cycle-Overview-of-all-stages.pdf>

73 IS Ratings

74 https://isca.org.au/is_ratings

Principles for Responsible Investment (PRI)

The United Nations established the Principles for Responsible Investment, a set of six principles for institutional investors engaging in ESG practices, in 2006 with 100 founding signatories.⁷⁵ Today, the PRI has amassed over 2,300 signatories. Signatories who adopt the six principles (outlined below) are signing on to aspirational aims and have discretion as to how they want to implement the principles in their investment practices. Signatories report on their responsible investment practices and receive a score from PRI to facilitate internal learning and development and to help focus conversations with asset managers. Since 2014, PRI has compiled aggregate data from its signatories' assessments to provide a holistic view of the evolution of responsible investment practices in the institutional community.

Principles for Responsible Investment:

Principle 1: We will incorporate ESG issues into investment analysis and decision-making processes.

Principle 2: We will be active owners and incorporate ESG issues into our ownership policies and practices.

Principle 3: We will seek appropriate disclosure on ESG issues by the entities in which we invest.

Principle 4: We will promote acceptance and implementation of the Principles within the investment industry.

Principle 5: We will work together to enhance our effectiveness in implementing the Principles.

Principle 6: We will each report on our activities and progress towards implementing the Principles.

Reporting Process: All PRI signatories are required to report on their responsible investing practices or risk being delisted. Reporting occurs each year between the first week of January and the end of March, when the PRI reporting portal is live. There are two reporting modules - one for investors and one for service providers. Both incorporate evaluations of the overall organization, its strategy and governance, and third-party assurance. Investors must also report on asset class specific topics, and as of 2020, they are required to report against climate change indicators.

Integration across the investment process: PRI provides guidance to investors on how to integrate ESG factors into the investment analysis and decision-making processes, as well as how to be active owners in alignment with Principles 1 and 2. With respect to infrastructure investments, both direct and indirect, PRI offers suggestions for ESG incorporation through deal origination, screening, due diligence, and post-acquisition activities.⁷⁶

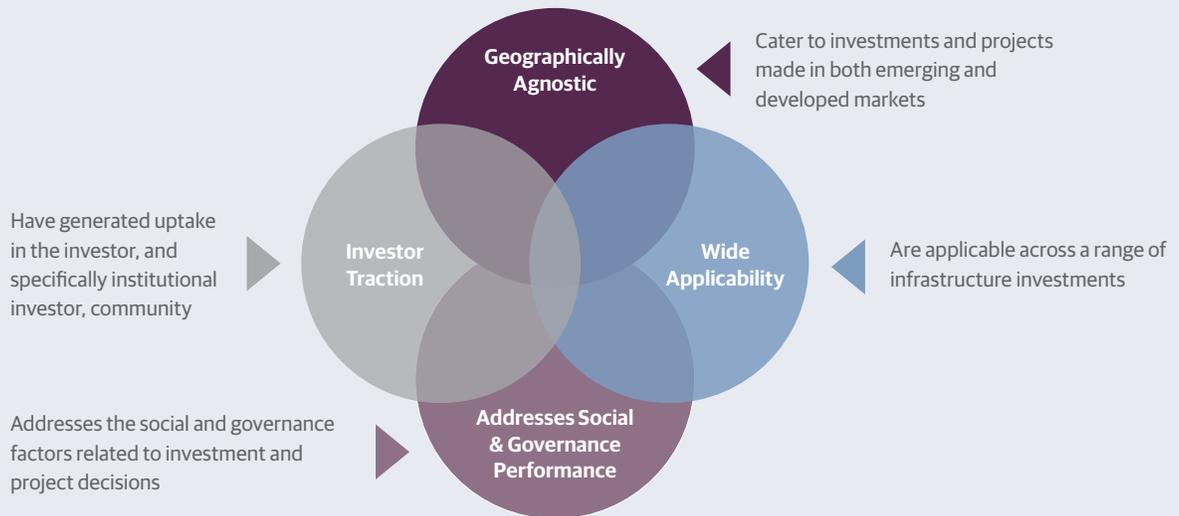
⁷⁵ <https://www.unpri.org/>

⁷⁶ <https://www.unpri.org/download?ac=4141>

Appendix III: Standards Selection Methodology

Evaluation of Metrics, Standards and Tools

Figure 3: Prioritization Parameters for Tools Included in the Taxonomy



Addresses social and governance performance: The proliferation of ESG measurement tools coupled with the urgency of and global attention to climate change has resulted in significant efforts to measure and manage the environmental impacts of investment and business decisions. Relative to social and governance factors, environmental effects, such as greenhouse gas emissions, are easier to quantify and compare across decisions. Therefore, we focus on those tools that address the social and governance factors related to investment and project decisions. These tools include metrics or frameworks to assess an investment or project's effect on a multitude of stakeholders, including employees, contractors, and local communities. They also provide mechanisms for evaluating the quality of governance practices associated with an investment or project, such as metrics around transparency and disclosure, internal policies around diversity and inclusion, and stakeholder engagement.

Traction within the Investor Community: A key potential value-add of ESG measurement tools is the ability to ex post evaluate the relative social and environmental benefits of different investment and project decisions, as well as the potential to ex ante vet various investment decisions based on ESG assessments. This criterion addresses the extent to which there is uptake in the investor, and specifically institutional investor, community for a specific ESG measurement tool. By focusing on uptake among investors, we prioritize comparability for better decision-making. Additionally, emphasizing those tools that have garnered significant uptake may weed out tools that require sufficient transaction costs to deter usage.

Applicability Across a Range of Infrastructure Investments: With the propagation of ESG considerations across investor and business communities has come the development of an abundance of bespoke and proprietary measurement tools, designed specifically for one type of investor or investment. We do not consider these tools in our evaluation. Instead, we focus on tools that are applicable across a range of infrastructure investments, with metrics narrow enough to aid decision-making but broad enough to address infrastructure investments with varied impact themes, from water and sanitation to roads and bridges.

Geographically Agnostic: The impact of infrastructure projects on communities varies depending on the level of development in the host country or region. We prioritize measurement tools that are geographically agnostic, meaning they don't take into account country-specific regulations and they cater to investments and projects made in both emerging and developed markets. We do, however, note those tools that, while developed with a certain country or region in mind, may be applicable to other geographies.

	Name	Social and Governance	Traction	Applicability	Geographically Agnostic
1	GRESB	X	X	X	X
2	Principles for Responsible Investment (PRI)	X	X	X	X
3	Global Reporting Initiative (GRI)	X	X		X
4	Social Performance Task Force Universal Standards	X			
5	GIIRS	X			X
6	IFC Sustainability Policies and Standards	X		X	X
7	IIRC				X
8	SuRe	X	X	X	X
9	Envision	X	X	X	X
10	CEEQUAL		X	X	X
11	SASB	X	X	X	X
12	ISCA	X	X	X	
13	GHG Protocol		X	X	X
14	CDC ESG Toolkit	X	X	X	
15	SDGs	X	X	X	X
16	IRIS+	X		X	X
17	Impact Management Project	X		X	X
18	IFC AIMM	X		X	
19	Triple Bottom Line Cost Benefit Analysis			X	X
20	Sustainability Bond Guidelines	X			X
21	G7 Ise-Shima Principles for Promoting Quality Infrastructure Investment	X		X	X
22	Equator Principles	X	X	X	X
23	DGNB Urban Districts Scheme			X	X

Appendix IV: Short-listed Tools, Standards and Metrics

1. GRESB
2. PRI
3. SuRe
4. Envision
5. SASB
6. Equator Principles
7. CDC ESG Toolkit*
8. ISCA*

*Indicates tools that are not geographically agnostic, but may be applicable across geographies

Tools	GRESB	SuRe	Envision	SASB	Equator Principles	CDC ESG Toolkit	ISCA	UNPRI
Users	Asset operators	Asset operators, investors	Sponsors, governments	Companies	Financial institutions	Fund managers	Developers, investors, sponsors	Investors
Metric Type	Procedure, Performance	Procedure, Performance	Procedure	Procedure, Performance	Procedure	Procedure	Procedure, Performance	Procedure
Investment Stages	Construction, Operations	Design, Construction, Operations, Exit	Design, Construction, Operations, Exit	Operations	Sourcing, Design	Sourcing, Design, Construction, Operations, Exit	Design, Construction, Operations	Design, Construction, Operations
Certification		Accredited third-party certification	Awards based on third-party process verification				Ratings based on third-party verification	

Appendix V: List of Infrastructure Investment Managers

Largest Infrastructure AUM						
Company	Infrastructure AUM (€m)	Total AUM (€m)	Signatory Category	GRSB	SASB	GIN
Macquarie Infrastructure & Real Assets	107,691	119,852	Investment Manager	No	Yes	No
Brookfield Asset Management	99,234	309,300	Investment Manager	No	Yes	No
M&G Investments/InfraCapital	51,000	295,421	Investment Manager	No	No	Yes
Global Infrastructure Partners	50,285	50,285	Investment Manager	No	No	No
IFM Investors	37,629	72,092	Investment Manager	No	Yes	No
Nilianz Global Investors	29,310	505,000	Investment Manager	No	Yes	Yes
The Carlyle Group	24,066	197,879	Investment Manager	No	Yes	No
BlackRock	20,539	5,331,072	Investment Manager	Yes	Yes	Yes
EDF Global Energy Partners	19,955	19,955	Investment Manager	No	No	No
AMP Capital	18,550	128,431	Investment Manager	No	No	No
M&L Investment Advisors	18,131	539,017	Investment Manager	No	No	Yes
DWS	16,433	78,741	Investment Manager	No	No	No
Energy Capital Partners	16,321	16,321	Investment Manager	No	No	No
EQT	14,938	40,000	Investment Manager	No	No	No
First State Investments	14,916	125,751	Investment Manager	No	No	No
Stonepeak Infrastructure Partners	12,876	12,876	Investment Manager	No	No	No
AFG Asset Management	11,367	462,592	Investment Manager	Yes	No	No
Kohlberg Kravis Roberts & Co.	11,017	169,596	Investment Manager	No	No	Yes
Nuveen	10,821	811,431	Investment Manager	No	Yes	Yes
Lazard Asset Management	10,325	168,656	Investment Manager	No	Yes	No
J.P. Morgan Asset Management	10,173	2,485,998	Investment Manager	Yes	Yes	Yes
iSquare Capital (iSquare Cap.)	10,190	10,190	Investment Manager	No	No	No
Pantheon Ventures (UK)	9,801	38,072	Investment Manager	No	No	No
Amber Infrastructure Group	9,241	9,241	Investment Manager	No	No	No
Partners Group	9,178	72,846	Investment Manager	No	No	No
InfraRed Capital Partners	8,524	10,560	Investment Manager	No	No	No
Legal and General Investment Management	8,296	1,117,000	Investment Manager	No	Yes	No
Artis Infrastructure Partners	8,225	8,225	Investment Manager	No	No	No
Ardian	7,862	78,620	Investment Manager	No	No	No
Copenhagen Infrastructure Partner	7,500	7,500	Investment Manager	No	No	No
AXA Investment Managers - Real Assets	7,452	82,000	Investment Manager	No	Yes	Yes
Aviva Investors Global Services	7,323	397,924	Investment Manager	Yes	No	No
QIC	6,657	52,261	Investment Manager	No	No	No
Meridiam	6,600	6,600	Investment Manager	No	No	No
Cohen & Steers	6,300	55,700	Investment Manager	No	No	No
Manulife Investment Management	6,128	344,059	Investment Manager	No	Yes	No
Blackstone	6,049	456,190	Investment Manager	No	No	Yes
CBRE Caledon Capital Management	6,000	8,000	Investment Manager	No	Yes	Yes
Alinda Capital Partners	5,843	5,843	Investment Manager	No	No	No
Goldman Sachs Merchant Banking & Advisory	5,742	82,683	Investment Manager	No	Yes	No
DIF	5,596	5,596	Investment Manager	No	No	No
Dalmore Capital	5,545	5,545	Investment Manager	No	No	No
Aquila Group	5,473	8,192	Investment Manager	No	No	No
Actis	5,384	-	Investment Manager	No	No	No
MEAG	5,215	254,297	Investment Manager	No	No	No
Hermes Infrastructure	4,616	4,616	Investment Manager	No	No	Yes
Equitix Investment Management	4,600	4,600	Investment Manager	No	No	No
Capital Dynamics	4,355	13,960	Investment Manager	No	No	No
UBS Asset Management	4,214	735,000	Investment Manager	Yes	Yes	Yes
Pathway Capital Management	4,135	48,269	Investment Manager	No	No	No
GCM Grosvenor	4,132	46,739	Investment Manager	No	No	No
Rivage Investment	4,031	5,237	Investment Manager	No	No	No
InfraVia Capital Partners	4,000	4,000	Investment Manager	No	No	No
Morgan Stanley Infrastructure Partners	3,840	3,840	Investment Manager	No	Yes	No
Arcus Infrastructure Partners	3,400	3,400	Investment Manager	No	No	No
Aberdeen Standard Investments	3,387	660,199	Investment Manager	No	No	No
Golding Capital Partners	3,300	8,400	Investment Manager	No	No	No
Vantage Infrastructure	3,139	3,139	Investment Manager	No	No	No
RARE Infrastructure	3,100	3,100	Investment Manager	No	No	No
Swiss Life Asset Managers	3,000	206,700	Investment Manager	No	No	No
Whitehelm Capital	2,989	3,263	Investment Manager	No	No	No
KGAL Investment Management	2,900	20,500	Investment Manager	No	No	No
Vauban Infrastructure Partners	2,800	2,800	Investment Manager	No	No	No
Schroder Aida	2,765	2,765	Investment Manager	No	No	No
Foresight Group	2,603	3,164	Investment Manager	No	No	No
Arium Infrastructure	2,585	2,585	Investment Manager	No	No	No
Amundi Platform of Alternative & Infrastructure	2,427	1,425,000	Investment Manager	No	No	No
Equis	2,421	2,421	Investment Manager	No	No	No
Northleaf Capital Partners	2,163	11,314	Investment Manager	No	No	No
3i Infrastructure	2,153	2,153	Investment Manager	No	No	No
Oaktree Capital Management	2,075	104,591	Investment Manager	No	No	No
Edmond de Rothschild Asset Management	1,830	68,000	Investment Manager	No	No	No
La Banque Postale Asset Management	1,647	3,500	Investment Manager	No	No	No
Sequoia Investment Management	1,424	1,424	Investment Manager	No	No	No
Ancala Partners	1,400	1,400	Investment Manager	No	No	No
TOTAL YES				5	16	12

Appendix VI: Analysis of Tools Baseline by Investor Type

Tool	Users	Sourcing/ Screening	Due Diligence	Investment	Post-Investment
PRI	Asset Owners	Evaluate GP's ESG integration process using the PRI's Infrastructure Investor Responsible Investment Due Diligence Questionnaire	Establish ESG expectations and strategy alignment with GP; Incorporate ESG policy into Limited Partner Agreement or side letter	Monitor ESG factors throughout the investment process; Assist GP in uptake of ESG issues	Evaluate investment and manager performance
	Asset Managers	Prepare responsible investment policy; Conduct ESG assessments of potential portfolio companies	Establish ESG expectations and strategy alignment with LP	Collect data and provide ESG reporting to LP	Disclose organizational performance
GRESB	Asset Owners	N/A	Encourage GPs to participate in annual GRESB assessment; Use ESG data and GRESB's analytical tools to engage with managers and prepare for rigorous ESG obligations	Monitor ESG performance and work with GP to incorporate ESG data into investment decision-making, such as capital allocation	Review Fund/asset performance relative to GRESB benchmark
	Asset Managers	N/A	Engage portfolio company to align on ESG data collection and reporting; Use GRESB's analytical tools to improve the sustainability performance of investment portfolios	Ensure portfolio company completes GRESB assessment or GP completes fund assessment	Review fund/asset performance relative to GRESB benchmark; Communicate results to LP
SASB	Asset Owners	Evaluate quality of GP's ESG integration	Establish ESG reporting expectations with GP	Monitor ESG investment performance	Evaluate investment and manager performance
	Asset Managers	Identify material ESG risks using SASB's Materiality Map and evaluate potential portfolio companies based on LP's risk profile	Establish ESG integration and reporting requirements with portfolio companies	Collect data and monitor ESG risk management; asset portfolio company in improving their ESG integration and performance	Disclose fund performance

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