Full Report

Testing Industry Attitudes Toward a Common Reporting Approach for ESG Data Use in Infrastructure Investment

August 2022

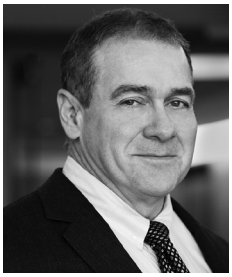
GUGGENHEIM

WWF

MOTT MACDONALD

KPMG

Foreword by Scott Minerd and Carter Roberts



Scott Minerd

Carter Roberts

First, the good news: Infrastructure is an increasingly important asset class for institutional investors. This is because of its long-lived cash flows and—if executed sustainably—its potential to have a positive economic, environmental, and social impact on our society. This trend is a major development given that public funds alone will not be enough to address the world's critical infrastructure needs.

If infrastructure projects could clearly outline compelling financial return propositions and ecosystem benefits, they could tap into the institutional capital they need to achieve the United Nations Sustainable Development Goals, facilitate the growth of developing countries, and upgrade the existing stock of aging capital assets around the world. The key to unlocking this capital is an agreed-upon set of standards that would certify a project as sustainable, allowing investors and developers to recognize a set of consistent methodologies and metrics for measuring and demonstrating a project's sustainability.

World Wildlife Fund (WWF) and Guggenheim Investments, together and separately, have been working to better understand the parameters of sustainable infrastructure investing. Our work, and the work of many others around the world, has led to significant progress in developing and identifying standards and metrics for sustainability. In 2018, we commissioned the Stanford Global Projects Center to identify and analyze the state of sustainability standards for infrastructure investors. Two years later, we asked KPMG and Mott MacDonald to apply a selection of environmental, social, and governance (ESG) and sustainability standards to two different operating infrastructure assets: a toll road and bridge in Bolivar, Colombia, and a desalination plant and pipeline in California. Their report assessed the effectiveness and practicalities of implementing these standards for investors.

As a next step in our work together, we again collaborated with KPMG and Mott MacDonald—this time to assess progress toward identifying and adopting a common set of standards. We commissioned a survey of practitioners around the world—data users (investors and lenders) and data preparers (owners, developers, and operators)—to gather information on the collection, reporting, and application of ESG data in infrastructure projects.

The results of the survey are summarized in this report. They show that while there is a shared desire for a common set of sustainability standards and metrics, we still have a long way to go before a consensus is reached. The survey results suggest that government regulation and/or pressure from investors or lenders will be needed to provide the catalyst for achieving this goal.

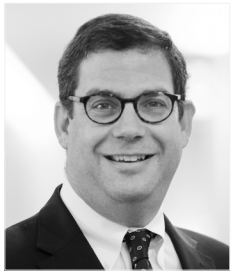
We agree with the authors of this report, who conclude that "the time for action is now." Trends in climate change and the COVID-19 crisis have led to an awakening in the finance sector of its roles and responsibilities in securing a healthy and stable planet and global economy. Meanwhile, governments have also stepped up their regulatory activism in this area. In the near future, we expect to see crucial developments in this space.

We want to commend the team at KPMG, led by Anton Zhigalov, and the team at Mott MacDonald, led by Niniane Tozzi, for their work on this important endeavor.

Scott Minerd
Chairman of Guggenheim Investments
Global CIO of Guggenheim Partners

Carter Roberts
President & CEO
World Wildlife Fund

Acknowledgements



James Pass

Kate Newman

Guggenheim Investments and World Wildlife Fund (WWF) thank KPMG and Mott MacDonald for leading this project, "Survey to Test Industry Attitudes Toward a Common Reporting Approach for the Assessment of Sustainability in Infrastructure Investment." In particular, we would like to recognize the contributions of team leaders Jerwin Tholen of KPMG and Niniane Tozzi of Mott MacDonald, with key contributions from team members Anton Zhigalov and Ödön Engegård of KPMG, and Kristy McConnel, formerly of Mott MacDonald. They were supported by Steve Beatty, global head of infrastructure, KPMG; Fernando Faria, global deputy head, KPMG IMPACT; Richard Threlfall, global head of KPMG IMPACT; and Joshua Ogier, vice president of infrastructure advisory, Mott MacDonald. We also appreciate the support of Michael Perkinson, Guggenheim Investments head of Asia business management, as well as Evan Freund, WWF-US senior director of sustainable infrastructure and finance; Sergiu Jiduc, WWF-Singapore program manager, sustainable infrastructure finance; and David McCauley, former WWF senior vice president for global partnerships and multilateral affairs. Finally, we want to acknowledge the facilitating efforts of colleagues at Handshake, especially Linda Giuliano and Julia Cox.

The results of this survey demonstrate that progress is being made toward internationally recognized standards for establishing the sustainability of infrastructure projects. First, there is a wide range of frameworks, labels, and principles in use across the marketplace to assess sustainability. In addition, both data preparers and data users agree there would be value in convergence toward a standardized baseline set of environmental, social, and governance (ESG) metrics in the infrastructure asset life cycle.

Nevertheless, the results of this project also show that efforts to improve reporting standards and metrics remain insufficient. There is more work to be done. Survey responses suggest that the sustainable infrastructure market needs incentives to coalesce around standards and, further, that these incentives can be best provided through action by both government and industry.

This survey was conceived and executed with the goal of furthering progress toward internationally recognized norms and standards in measuring the sustainability of infrastructure projects, which in turn will enable greater allocation of private capital by a diversified set of institutional investors. We believe the authors have moved us closer to this goal of unlocking that vital private capital.

Sincerely,

James Pass
Global Head, Project Finance
Guggenheim Investments

Kate Newman
Vice President, Sustainable Infrastructure and Public Sector Initiatives
World Wildlife Fund

Table of Contents

Executive Summary

This study was commissioned by Guggenheim Investments (Guggenheim) and World Wildlife Fund (WWF) as part of an ongoing collaboration between the two organizations to better understand the parameters of sustainable infrastructure. Through this collaboration, Guggenheim and WWF aim to support the United Nations (UN) Sustainable Development Goals (SDGs) by contributing to the development of a possible framework for enabling future infrastructure to be sustainable and resilient and by protecting the natural assets that benefit society and economies. This collaboration recognizes that, given the significant expected need for global investment in infrastructure now and in the future, it may become imperative that investors can consistently identify and direct capital to measurably sustainable and resilient infrastructure projects.

Approach

To further this concept, Guggenheim and WWF engaged KPMG Advisory N.V. and Mott MacDonald to support them in conducting a global survey and targeted interviews in the first quarter of 2022 to gather information on the collecting, reporting, and application of Environment, Social, and Governance (ESG) data in infrastructure projects. This included soliciting industry feedback on ESG frameworks, standards and principles, particularly as the global call to build sustainable infrastructure expands. The purpose of the survey was to test industry attitudes toward ESG data use in infrastructure investment. Specifically, the exercise sought to explore whether an industry-wide standard approach to measuring ESG in infrastructure investment is desired and how this might be achieved.

For the purposes of this exercise, **data users** are defined as lenders and investors, and **data preparers** are defined as asset designers, owners, developers, and operators in the public and private sectors.

Three major steps were taken:

1. Desktop Review

A scan of 29 ESG studies and articles to understand current industry perspectives and inform the development of questions for surveys and interviews.

2. Industry Survey

A quantitative and qualitative survey of 31 data users and 19 data preparers.

3. Industry Interviews

Qualitative interviews with six data users and eight data preparers to collect detailed perspectives on topics covered in the survey.

Results

The results of this three-step exercise showed that there is significant divergence in current ESG frameworks, with almost 40 different frameworks currently in use by respondents. The output suggests that the market sees value in convergence on one industry-tailored set of metrics for ESG data. Both data users and providers believe that apart from standardization and simplification, there are two mechanisms that may improve measurable integration of ESG into infrastructure investment:

1. Regulation mandating ESG disclosures
2. Pressure from investors and lenders

To support this overall finding, the survey and interview data identified four key themes:

Theme 1: Current ESG standards and frameworks are not meeting the needs of data users and preparers

There are a multitude of ESG standards and frameworks in use and under development in the infrastructure community, but there are challenges with these frameworks, namely:

- Lack of standardization and consistency in approach
- Too many frameworks (and different stakeholders using different frameworks that yield varied results)
- Lack of industry specific reporting standards
- Difficulty accessing necessary data
- Stakeholders operating at different scales (i.e., portfolio vs single asset)
- The inability to capture financial impacts of infrastructure projects on national, regional, or local scales very well

The majority of respondents agreed that it would be beneficial to adopt a standardized, baseline set of ESG metrics across all phases of the infrastructure asset lifecycle.

Theme 2: Data users and preparers agree that a standard set of ESG metrics would be helpful

The majority of respondents agreed that it would be beneficial to adopt a standardized, baseline set of ESG metrics across all phases of the infrastructure asset lifecycle. While there is currently no standardization, there is some agreement on priority topics. Survey respondents cited that across the ESG spectrum, the 'E' and 'G' are more adequately covered by existing standards than the 'S'. Standardization of ESG reporting requirements to drive consensus amongst data users and preparers is believed to be key.

Theme 3: Data users and preparers think differently about ESG

Overall, more data preparers than data users were satisfied with their ability to work with ESG data. There were differing sentiments between stakeholders on the effectiveness of ESG frameworks in capturing ESG and financial impacts of infrastructure. Interestingly, both stakeholder groups indicated that they had moderate to limited engagement with each other, a factor that would likely hinder bridging differences between data users and preparers. Greater collaboration and engagement between the two groups is fundamental to the development and application of unified, industry-relevant metrics.

Theme 4: There is broad agreement between data users and preparers that there needs to be better means to measure and report on ESG

Both data users and preparers agreed that simplification and standardization of ESG data are very important. When asked about potential levers, regulation mandating reporting, as well as investor and lender pressure, were named as the most effective mechanisms to improve the integration of ESG into infrastructure investment and lending.

Conclusions and Next Steps

It is time to take action on ESG data in infrastructure, and to work toward a standard set of metrics to be used universally.

The message is clear – markets (i.e., both data users and preparers) are looking for well defined and consistent expectations around metrics, standards, and reporting frameworks for ESG. However, left to self-regulate, there is a growing number of metrics, standards, and frameworks emerging. Current efforts are uncoordinated and inconsistent. The four identified themes of this exercise can be summarized into three key conclusions:

1. Current ESG standards and frameworks are not meeting the needs of infrastructure investors.
2. Stakeholders are interested in a standard set of metrics for reporting on ESG.
3. Pressure from investors and mandatory ESG disclosure requirements are identified as the primary mechanisms to improve integration of ESG into infrastructure investments.

The takeaways that emerged with this study are well-aligned with the results of the Desktop Review, as well as the previous studies completed by this research group. It is time to take action on ESG data in infrastructure, and to work toward a standard set of metrics to be used universally. The key to achieving consistency will be common, industry accepted definitions of "E," "S," and "G." The urgency to address emerging and evolving risks related to ESG, and the speed at which regulators around the world are introducing new mandatory requirements, suggests a rapid evolutionary pace for ESG in the investor community. Particularly in the last two years, the industry has come far in terms of ESG reporting. This is evidenced by mandates such as the EU Taxonomy and policy initiatives such as the U.S. Securities and Exchange Commission's (SEC) and Canada's Office of the Superintendent of Financial Institutions (OFSI) climate-related disclosure rules. Industry still has a chance to influence, but this window is closing, and the time for action is now.

Acknowledgements

This work would not have been possible without the participation of 50 organizations across the globe who are actively engaged in the infrastructure sector. Thank you to everyone who made this work possible, including anonymous participants and the following organizations:

AllianceBernstein
AMP Capital
BAI Communications
BlackRock
BTG Pactual S.A.
CIFI
Clifford Capital Holdings
Eurazeo Infrastructure Partners
GIC
GLIL Infrastructure
Global Infrastructure Partners
IDB Invest
Morrison & Co
NTR Asset Management Europe DAC
Partners Group
Plenary Funds Management
Providence Asset Group
TIIC
Transurban North America
Vinci Partners
Clean Energy Finance Corporation
Concesiones CCFC S.A.S.
Cory
Department of Transport and Main Roads
Infrastructure Sustainability Council
Inter-American Development Bank Group
Kainga Ora
McElhanney Ltd
ODINSA S.A.
Pennsylvania Turnpike Commission
Proyectos de Infraestructura S.A.S.
SSE PLC
The World Bank
Tideway

Introduction and Purpose

The study explored whether an industry-wide standard approach to measuring ESG in infrastructure investment is desired and how this might be achieved.

This study was commissioned by Guggenheim Investments (Guggenheim) and World Wildlife Fund (WWF) as part of an ongoing collaboration between the two organizations to better understand parameters of sustainable infrastructure. Through this collaboration, Guggenheim and WWF aim to support the United Nations (UN) Sustainable Development Goals (SDGs) by contributing to the development of a possible framework for enabling future infrastructure to be sustainable and resilient and by protecting the natural assets that benefit society and economies. Furthermore, this needs to happen in an evolving global context, evidenced by recent global events such as the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6), COVID-19, and the ongoing Ukraine-Russia conflict. The collaboration recognizes that, given the significant need for global investment in infrastructure, it may be imperative that investors are enabled to direct capital to sustainable and resilient infrastructure projects. This study follows two previous analyses:

1. A 2018 report undertaken by Guggenheim, WWF and the Stanford Global Projects Center (SGPC) reviewed tools designed to measure the sustainability and resilience of projects and assets that were available at the time to infrastructure investors and others in the infrastructure value chain (the Stanford Study). The core of the study was a comparative assessment of 12 standards and tools based on a five-dimensional framework of each standard's comprehensiveness, objectivity, clarity, transaction costs, and traction. The review was supplemented with interviews with institutional investors, asset managers, service providers, environmental advocates, engineering and construction firms, and public sector sponsors in the infrastructure sector to assess the current state of practice and identify challenges.
2. A 2020 report by KPMG, Mott MacDonald, Guggenheim Partners, and WWF on measuring sustainability in infrastructure investment, which took a deep dive into four existing frameworks and tools: the IFC Performance Standards/Equator Principles, Envision, the SDGs, and Impact Measurement and Valuation (the 2020 Study). The 2020 Study found that current standards and tools are not fully meeting the needs of investors. It concluded that the infrastructure and investment community would likely benefit from adopting a common reporting approach for the assessment of sustainability in infrastructure investment.

To further this concept, Guggenheim and WWF engaged KPMG and Mott MacDonald to support them in conducting a global survey and individual interviews in the first quarter of 2022 to gather feedback from the infrastructure community toward standardizing an industry-wide common reporting approach. The survey and interviews were designed to gather information on the collecting, reporting, and application of ESG data, including standards and principles, in infrastructure projects. Specifically, the exercise explored whether an industry-wide standard approach to measuring ESG in infrastructure investment is desired and how this might be achieved.

For the purposes of this survey, **data users** are defined as lenders and investors, and **data preparers** are defined as asset designers, owners, developers, and operators in the public and private sectors.

Three major steps were taken:

1. Desktop Review

A scan of 29 recent ESG studies and articles to understand current industry perspectives and inform the development of questions for surveys and interviews (steps 2 and 3). The Review looked at industry reports, academic studies, and investor surveys and reports.

2. Industry Survey

A quantitative and qualitative survey of 50 respondents (31 data users and 19 data preparers).

3. Industry Interviews

Qualitative interviews with 14 respondents (six data users and eight data preparers) to collect detailed perspectives on topics covered in the survey.

This report outlines the background, approach, results and key themes, conclusions, and next steps from the study.

Background

There is growing consensus that the biggest barrier to achieving ESG outcomes is availability of data.

Building on the Stanford Study and the 2020 Study, the first step toward developing this survey was to undertake a desktop review of existing ESG studies and articles that address sustainability in infrastructure investment. The Desktop Review, which considered 29 studies, had the following key findings:

1. ESG data use is gaining momentum with investors

ESG metrics are increasingly being considered by investors, as well as companies across a wide spectrum of industries. Multiple studies found that the COVID-19 pandemic has only reaffirmed and accelerated ESG-driven investment. Standards and disclosure requirements are beginning to emerge but are relatively new and largely still under development. The exception is in the 'E' of ESG, where environmental standards seem to be more robust, particularly with respect to climate change, for which the Task Force on Climate-Related Disclosures (TCFD) and Science Based Targets Initiative (SBTi) have well-developed and utilized standards.

2. A single definition of ESG across industry is challenging to achieve

While agreed-upon definitions of ESG are important, a single, uniform standard may not be feasibly used across all stakeholders and industries. More important is that investors work with companies to agree to a set of ESG metrics and set priorities for outcomes or goals. The agreed principles may be grounded in existing frameworks, like the UN SDGs or the Paris Agreement, or may be bespoke depending on the stakeholders' priorities.

3. Clear metrics are needed

Irrespective of a methodology or framework used to track and monitor ESG outcomes, investors and other stakeholders should identify clear metrics that align with the stakeholders' ESG principles. Clear metrics are useful for decision making, understandable, verifiable, objective, consistent and trackable over time.

4. Accessing quality ESG data is challenging

There is growing consensus that the biggest barrier to achieving ESG outcomes is availability of data due to limitations in accessing what is often proprietary information, as well as challenges processing the data. Further, there is significant discussion around science-based targets and how to turn scientific data into useful information for the investment and asset management industry.

Overall, the studies reviewed concluded that ESG in infrastructure investment is here to stay, and there is continual work to be done by data users and data preparers, amongst other stakeholders, to fully integrate ESG into projects in a way that aligns with societal expectations and facilitates sustainable development.

Approach

The goal of the survey and interviews was to fill remaining gaps in understanding of industry perspectives on the use of ESG data, including standards and principles, in infrastructure development.

Given the results of the Stanford Study, the 2020 Study, and the Desktop Review, the survey and interviews were focused on understanding the key challenges facing infrastructure ESG data users and preparers. Further, the survey investigated perspectives on whether and how the industry should move toward more standardization of ESG metrics and reporting. The goal of the survey and interviews was to fill remaining gaps in understanding of industry perspectives on the use of ESG data, including standards and principles, in infrastructure development. The survey and interviews were conducted between January and March 2022. This section outlines the process for developing the survey and interviews.

Survey Development

Two distinct, but parallel surveys were developed to gather feedback from each of the target stakeholder groups – 31 data users and 19 data preparers. This included a set of general questions to understand descriptive information about respondents, including the type and size of their organization, and their location. Then, a set of multiple-choice and open-ended questions (26 for data users and 24 for data preparers, see Appendix 1) were developed to understand their perspectives on ESG. The questions to data users and data preparers were phrased similarly to be able to compare the results amongst both groups of respondents. The surveys were designed to take a maximum of ten minutes to ensure a high rate of completion. It is important to note that some questions asked respondents to rank preferences with lowest scores reflecting highest preference i.e., Q24: What are the most effective mechanisms to improve the integration of ESG into infrastructure investment and lending? Please rank in order of effectiveness with 1 being the most effective and 5 being the least effective. The data user and data preparer survey questions and results are shown in Appendix 1.

Interview Question Development

Similarly, two distinct, but parallel sets of qualitative discussion questions were developed to complement the findings of the survey. Interviews were conducted with six data users and eight data preparers. The interviews were conducted by phone or video call and respondents were asked a set of five questions developed specifically for each stakeholder group. Similarly, the industry interview questions were adjusted slightly for data users and preparers to recognize the different ways that each group interacts with ESG. The questions and responses are provided in Appendix 2.

Participant Selection

The distribution list for the survey was developed by collecting contacts from KPMG, Mott MacDonald, Guggenheim, and WWF. The aim was to distribute the survey to leading organizations in the infrastructure sector and to reach the people within these organizations directly involved with ESG data. To identify individuals for the interviews, a subset of organizations from the survey distribution list were contacted with an aim of having representation from various sub-sectors within infrastructure development and from different geographic areas.

The survey received 50 responses overall, including 31 data users and 19 data preparers. Of the data users, 61% were Equity Investors/Owners, 20% were Debt Investors/Lenders, and 19% identified as "other" which included the following types of organizations:

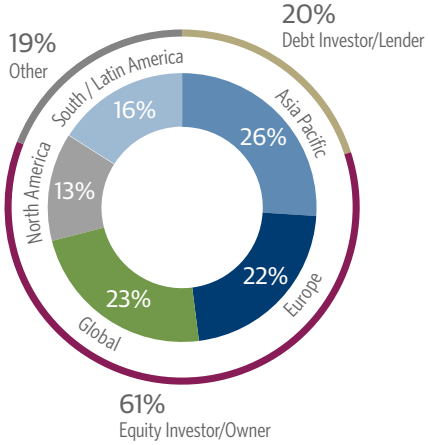
- M&A Tax professional – Debt and Equity investor's inhouse tax team
- ESG team (institutional)
- Asset developer
- Corporate
- Financial Advisor
- Portfolio company

Of the data preparers, 42% were Government/Public Sector Infrastructure Asset Owners or Operators, 37% were Private Sector Infrastructure Asset Owners or Operators, 5% were engineering firms, and 16% identified as "other" which included:

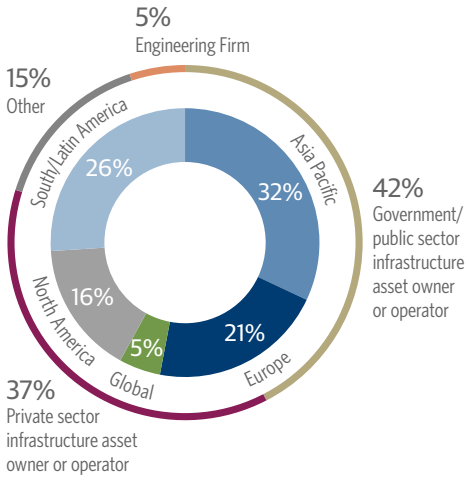
- Local development bank
- Infrastructure Sustainability Rating Standard, peak body, and assurance agency
- Multilateral Development Bank

Respondent locations and organization type are shown below:

Data Users



Data Preparers



Limitations

Due to the participant selection process, there is some inherent selection bias in the survey and interviews. Organizations were chosen based on an informed expectation that they would be willing to participate in such a study. The survey was shared with more than 200 stakeholders and there was a degree of self selection in who finally responded. Despite the global spread of participants in this study, the sample size was relatively small and thus, the results are not representative of the global infrastructure community. Question development, and the specific wording of questions, may also have influenced results in some cases.

Results and Key Themes

There is significant divergence in current ESG frameworks, with almost 40 different frameworks currently in use by respondents.

Results: The industry sees value in a standardized set of metrics

The results of the survey and interviews suggest that the market sees value in a standard set of metrics for ESG, and that, currently, there is no industry consensus on a definition for ESG (Figure 1, Figure 2).

Figure 1. Data user opinions on whether there is an industry consensus on an ESG definition

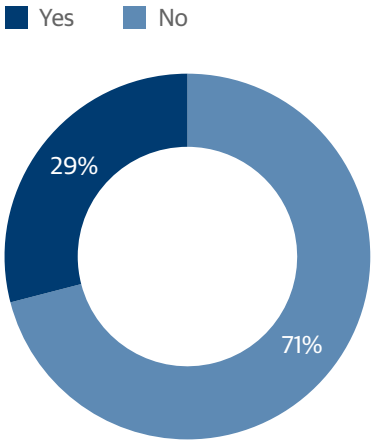
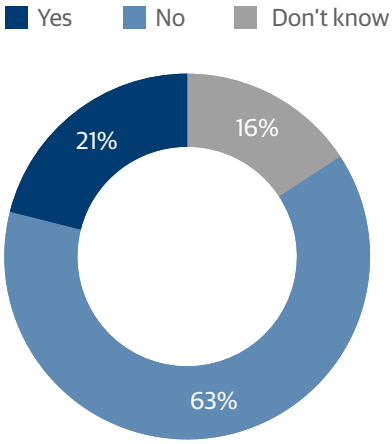


Figure 2. Data preparer opinions on whether there is an industry consensus on an ESG definition



The results showed that there is significant divergence in current ESG frameworks, with almost 40 different frameworks currently in use by respondents.

Both groups believe that in addition to standardization and simplification, there are two mechanisms that may improve measurable integration of ESG into infrastructure investment:

1. Regulation mandating ESG disclosures
2. Pressure from investors or lenders

The results have been summarized into four themes with supporting key findings as established in the following sections.

The abundance of reporting frameworks together with lack of standardization cause confusion

Theme 1: Current ESG standards and frameworks are not meeting the needs of data users and preparers

There are a multitude of ESG standards and frameworks in use and under development in the infrastructure community. When asked which standards and frameworks were being used, respondents identified more than 18 frameworks in use across the 50 respondents, as well as 18 proprietary frameworks (Appendix 1, survey 7).

- Across both data users and preparers, there was widespread agreement that existing standards and frameworks are better at capturing E (61% of data users and 63% of data preparers agreed that current ESG standards capture environmental impacts adequately well) than S and G data (Appendix 1, survey 9). This was also reinforced by key findings from the Desktop Review.
- The survey results also indicated consensus across the two groups that financial impacts of decisions are not being captured adequately in existing tools (Figure 3, Figure 4).
- While slightly more than half of data users expressed that S was captured adequately well, only 26% of data preparers claimed that S was adequately well captured (Appendix 1, survey 10). The survey also showed disagreement between data preparers and data users in terms of the successful capture of G data in existing frameworks, with data users citing more positive use of the G component (Appendix 1, survey 11).
- Data user and preparer interviews revealed the following key challenges with existing frameworks:
  - Lack of standardization
  - Too many frameworks (and different stakeholders using different frameworks that yield varied results)
  - Difficulty accessing necessary data
  - Different stakeholders operating at different scales (i.e. portfolio vs single asset)

ESG Standards and Frameworks Used by Respondents:

CDC Sustainability Protocol	GRESB	SuRe
CDSB	GRI	TCFD
CEEQUAL	IBD	UN PRI
Envision	IFC/EP	UN SDGs
G20 QII Principles	ISCA	WEF/IBC
GHG Protocol for Lifecycle Assessment	SASB	18 bespoke and proprietary frameworks
	SBTI	

The survey found consensus that some convergence of standards and metrics toward a common approach is needed.

Figure 3. Data users' answers to the question, "How well do current ESG reporting frameworks, standards, and principles capture the financial impacts of infrastructure projects on national, regional, and local economies?"

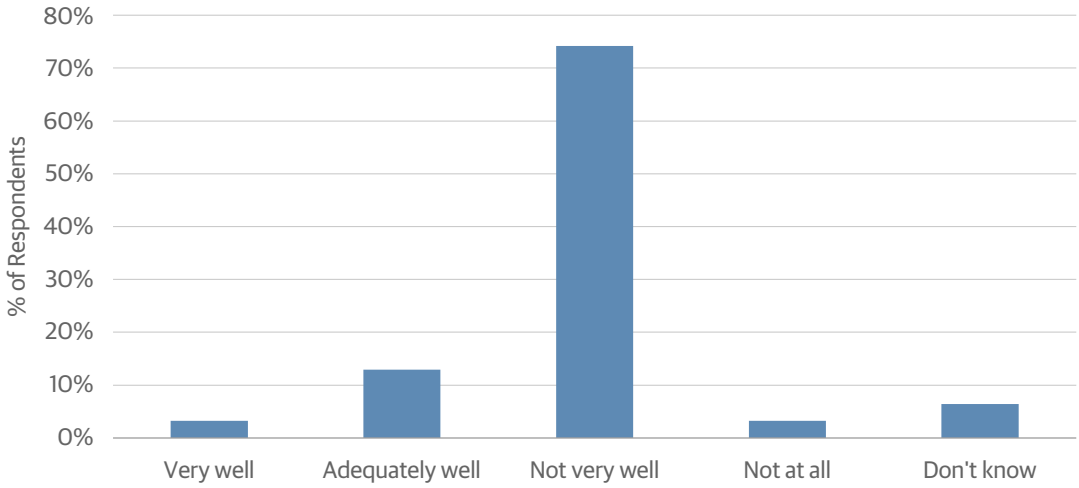
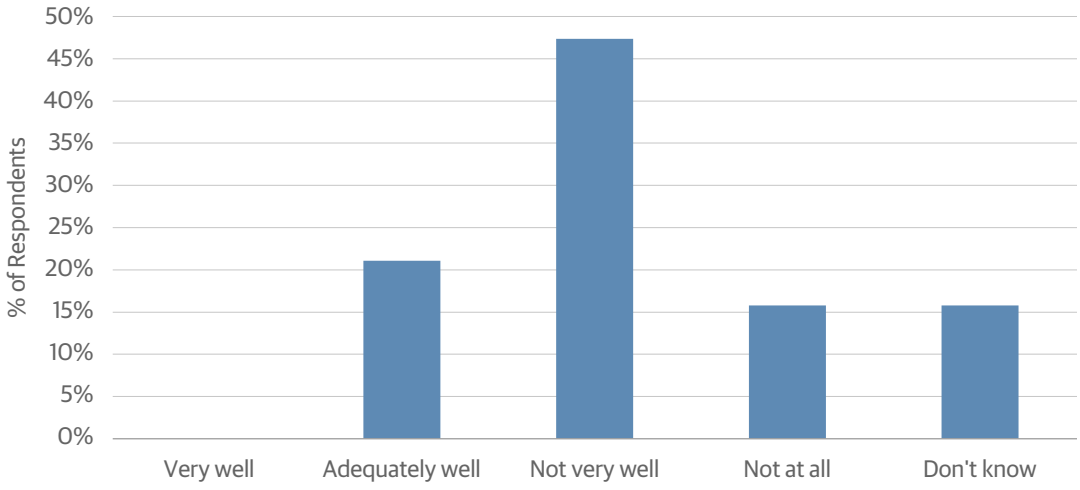


Figure 4. Data preparers' answers to the question, "How well do current ESG reporting frameworks, standards, and principles capture the financial impacts of infrastructure projects on national, regional, and local economies?"



Broadly, the survey found consensus that some convergence of standards and metrics toward a common approach is needed, and that government intervention or regulation, to some extent, is necessary.

When asked if they think there is an industry consensus on a definition for ESG, 67% of all respondents said no.

Theme 2: Data users and preparers agree that a standard set of ESG metrics would be helpful

When asked if they think there is an industry consensus on a definition for ESG, 67% of all respondents said no (survey Q5). Further, 94% of all respondents agreed that there would be a benefit to adopting a standardized, baseline set of ESG metrics across all phases of the infrastructure asset lifecycle (Figure 5 and Figure 6).

Figure 5. Data users' responses to the question "Would there be a benefit from adopting a standardized baseline set of ESG metrics in the infrastructure asset lifecycle?"

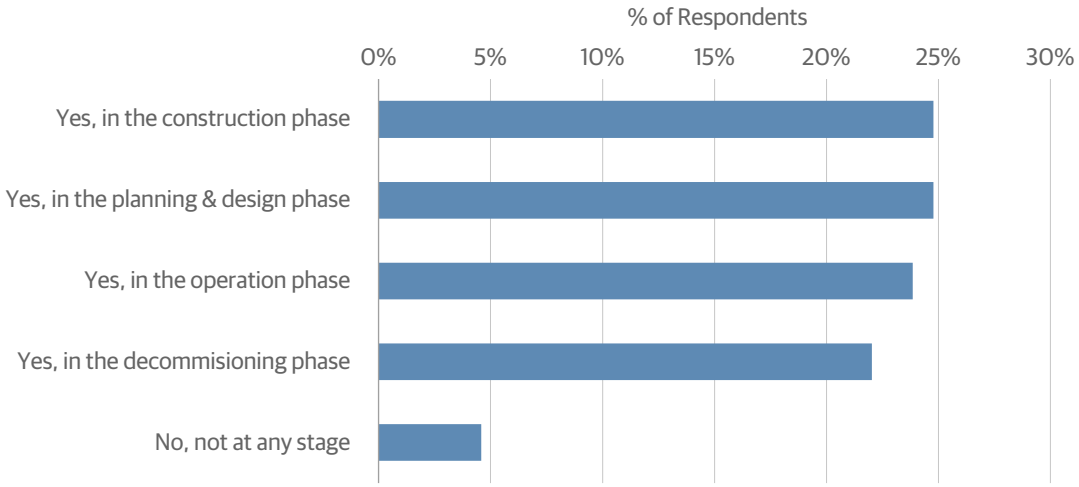
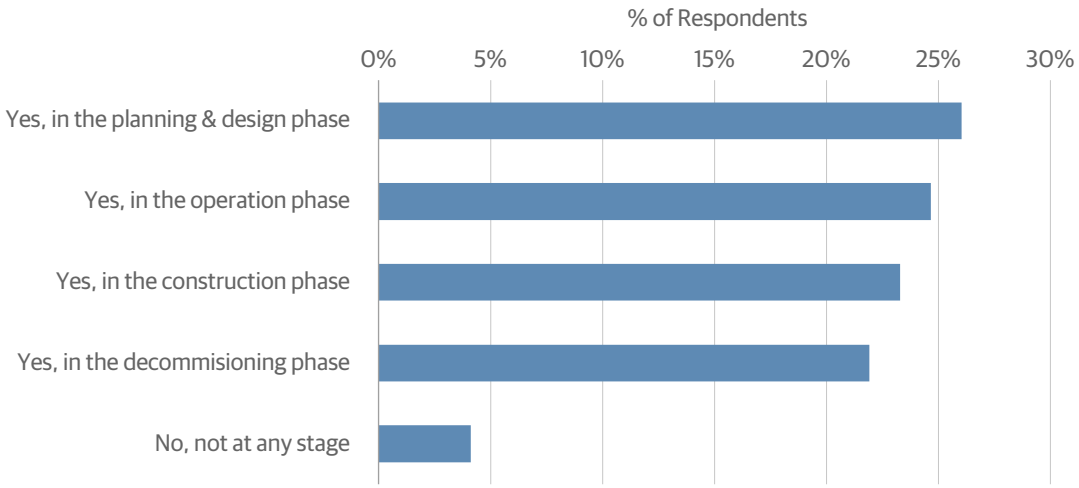


Figure 6. Data preparers' responses to the question "Would there be a benefit from adopting a standardized baseline set of ESG metrics in the infrastructure asset lifecycle?"



ESG **metrics** are units for measuring particular aspects of ESG performance, whereas **frameworks** are the tools used to evaluate performance against a set of metrics.

While there is currently no standardization, there is some agreement on topics of priority:

- For **E**: Factors related to climate change and biodiversity came out as most highly weighted across stakeholders (survey Q12). Climate change stood out as a top priority (survey Q19), however interviews found that reporting on technical metrics can be challenging, and methodologies are highly variable (i.e., for carbon accounting). Key finding 1 from the Desktop Review supported this notion of related to climate change as standards and disclosures as being further advanced than other ESG areas.
- For **S**: Diversity and inclusion, community outreach and involvement, and impact on Indigenous peoples and local communities were highly weighted across stakeholders; examples of divergence, on the other hand, include data users placing more weight on public health and safety than data preparers and data preparers placing more weight on employment opportunities than data users (survey Q13).
- For **G**: Data security and cyber security were found to be priorities (survey Q14).

In interviews, more than half of data users indicated that they had a bespoke ESG assessment tool for their organization, while about 50% of data preparers cited a bespoke tool. Data users indicated that bespoke tools are an important way to differentiate themselves in the market. Interview respondents cited the following reasons for developing bespoke ESG frameworks: compiling principles from a range of established frameworks, desire to develop something tailored to their portfolios and services, and wanting to focus more on one component of ESG than all three (interview Q1).

As reflected in the Desktop Review (key findings 2 and 3) and interviews (data preparer responses to interview Q3), variations in asset class, project size, and location, make agreeing on a single, industry wide ESG framework difficult. Both data users and preparers cited inconsistency, and lack of standardization in ESG data, as barriers to integrating ESG data into decision making (interview Q6). To address these challenges and deliver better ESG outcomes on projects, multiple data preparers cited in interviews the need to focus on consensus around impact-driven metrics for the infrastructure industry, as opposed to frameworks, which are tools to deliver on metrics.

Theme 3: Data users and preparers think differently about the use of ESG data

With respect to their ability to integrate ESG data into their infrastructure decision-making (survey Q4), 39% of data users indicated that they were satisfied with their current ability to integrate ESG data into their investment or lending processes and decisions. A similar question (survey Q4) asked of data preparers which found that 63% were satisfied with their ability to provide ESG data to investors and lenders. Survey questions 9-11 also show varying sentiments between data users and preparers on the effectiveness of ESG frameworks in capturing ESG impacts of infrastructure (Figure 7, Figure 8). To note, variations between both groups are likely due to the inherent difference between the way preparers and users receive and use ESG data: data users are on the receiving end of data whereas preparers are collecting, interpreting, and providing data. Survey Q6 reveals this stark difference: data users cite inconsistent ESG data provided by data preparers as the most significant challenge to integrating ESG data into decision making, while preparers cite lack of standardization and difficulty in accessing ESG performance data as their top barriers in providing comprehensive data.

Furthering the challenge is the wide variety of frameworks in use. This variability makes data consistency and sharing a significant challenge.

Figure 7: Data users' responses to the question, "How well do current ESG reporting frameworks, standards and principles capture the quality of governance of infrastructure projects?"

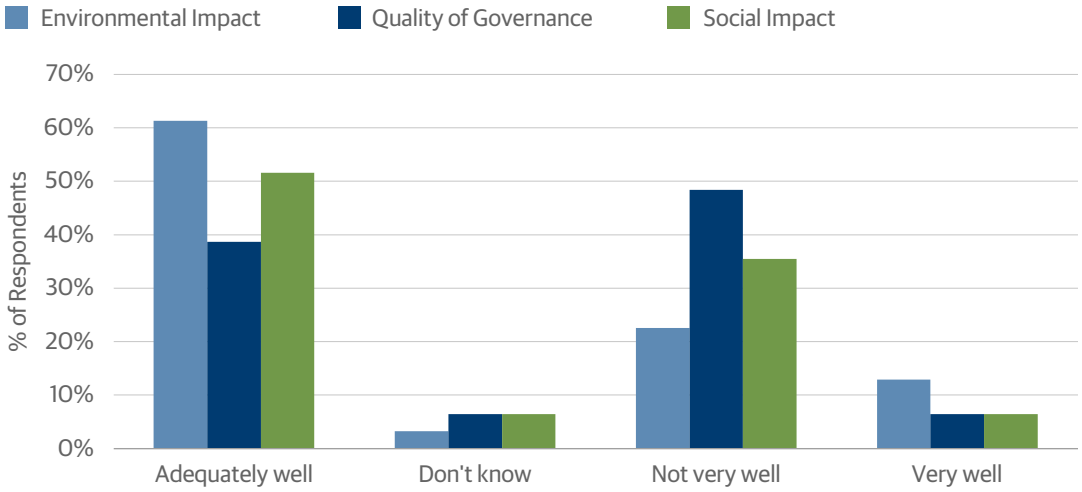
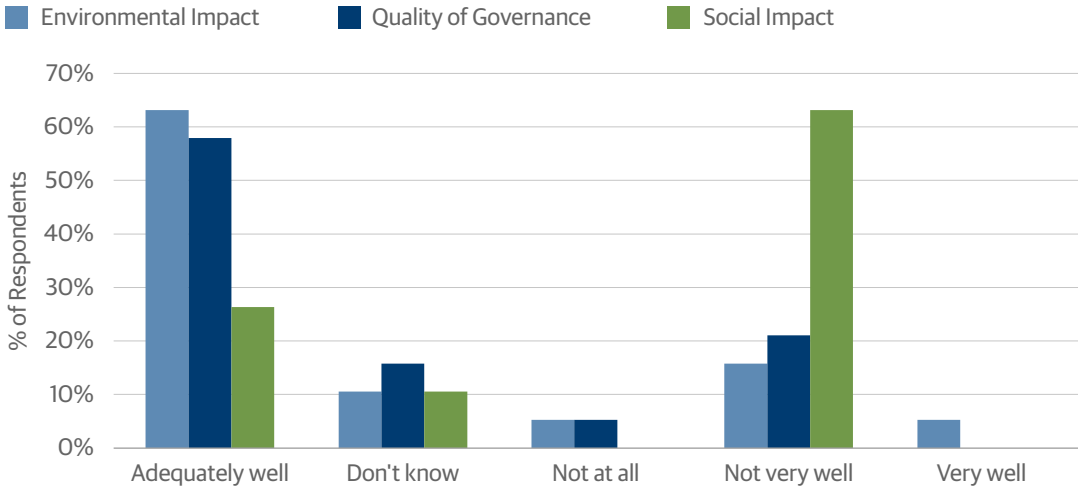


Figure 8: Data preparers' responses to the questions, "How well do current ESG reporting frameworks, standards and principles capture the quality of governance of infrastructure projects?"



Interestingly, there were differing opinions between stakeholders on the engagement between groups for the purpose of receiving and providing ESG data (survey Q18). 45% of data users reported moderate engagement with infrastructure data preparers while 64% of data preparers cited either a high level or moderate level of engagement with users. Perhaps this misalignment is at the root of the perception on how well-equipped data preparers are to provide data users with ESG data. Furthering the challenge is the wide variety of frameworks in use. This variability makes data consistency and sharing a significant challenge.

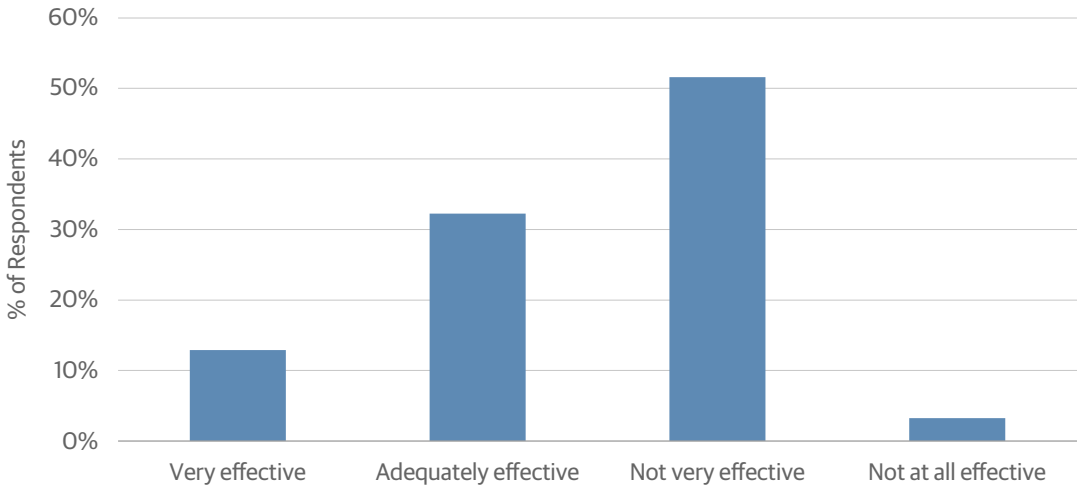
More than 50% thought that government policy is not currently very effective in driving ESG reporting in infrastructure.

Theme 4: There is broad agreement between data users and preparers that there needs to be better means to measure and report on ESG

Just as respondents agreed that a standardized set of ESG metrics would be useful, they agreed that there is a need for better means to measure and report on ESG. Both data users and preparers agreed that simplification or standardization of ESG data and regulation mandating reporting would be the most effective mechanisms to improve the integration of ESG into infrastructure investment and lending (survey Q24). Interestingly, both stakeholder groups found pressure from civil society to be the least effective to drive integration. Inconsistent ESG data was also cited as a challenge to integrating ESG data into stakeholder ESG processes (survey Q6).

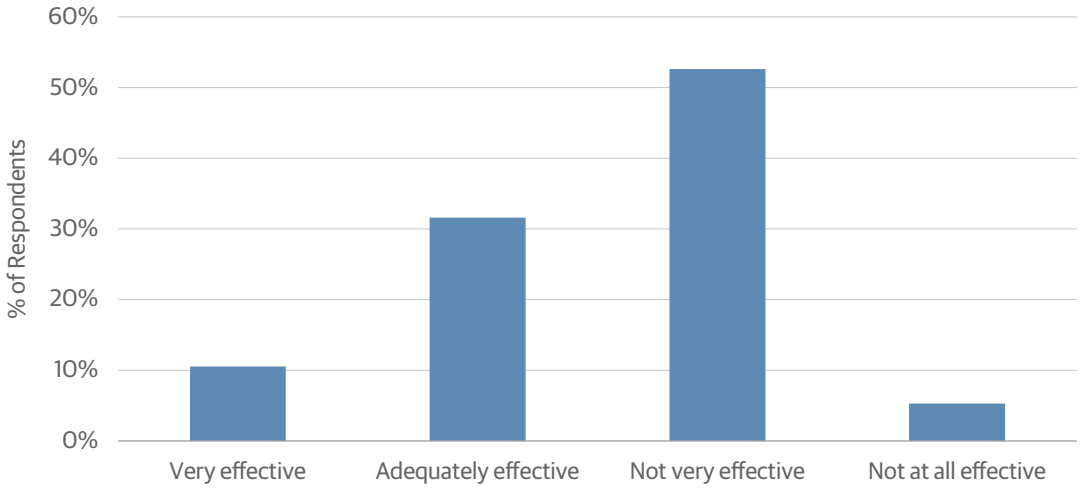
Among data preparers and users, when asked about how effective government policy is in driving ESG reporting in infrastructure, more than 50% thought that government policy is not currently very effective (Figure 9, Figure 10).

Figure 9. Data users' answers to the question, "How effective is government policy and-or regulation in driving ESG reporting in infrastructure?"



Data preparers strongly indicated that they believed government intervention is needed to drive ESG outcomes and reduce the risk of overstating or misrepresenting the impact of infrastructure investment.

Figure 10. Data preparers' answers to the question, "How effective is government policy and-or regulation in driving ESG reporting in infrastructure?"



In interviews, data preparers strongly indicated that they believed government intervention is needed to drive ESG outcomes and reduce the risk of overstating or misrepresenting the impact of infrastructure investment. Data user interviews also cited challenges around access to, and quality of, ESG data. Data users frequently mentioned the TCFD as a major regulatory development which has impacted their reporting. The key referenced advantage by interviewees was that the TCFD generally meets a high enough level of detail required by investors. Based on this, the role of governments to address these challenges is to further develop ESG requirements for the infrastructure industry.

Conclusions and Next Steps

Conclusions

Markets (i.e., both data users and preparers) are looking for better metrics, standards, and reporting frameworks for ESG.

The objective of this work was to test industry attitudes toward a common reporting approach for the assessment of ESG in infrastructure investment. The survey aligned with the conclusions of previous studies, including the Stanford Study, the 2020 Study, and the Desktop Review conducted before development of the survey: There is widespread support for the development of standardized metrics and improved reporting frameworks for ESG in infrastructure.

The four identified themes of this exercise can be summarized into three key conclusions that support past research efforts:

1. Current ESG standards and frameworks are not meeting the needs of infrastructure investors. While data users and preparers cite current frameworks' greater emphasis on the E of ESG, overall, there is still concern about the lack of comprehensive, industry tailored ESG disclosures.
2. Stakeholders are interested in a standard set of metrics for reporting on ESG. While individual frameworks may be more suitable for a particular type of asset or organization, the respondents believe that a standardized and simplified set of metrics will help achieve better ESG outcomes in infrastructure development.
3. Pressure from investors and mandatory ESG disclosure requirements are identified as the primary mechanisms to improve integration of ESG into infrastructure investments. Developing policies to mandate ESG reporting should include stakeholder input from both data users and preparers.

The message is clear – markets (i.e., both data users and preparers) are looking for better metrics, standards, and reporting frameworks for ESG. Left to self-regulate, there is a growing number of ESG tools emerging that are not collectively serving the infrastructure industry. Current efforts are uncoordinated and inconsistent, and the ESG outcomes that are intended to result in good for society are ill defined and unlikely to be achieved. The survey results showed that a change in approach involving collaborative action by government and industry could improve this and ultimately result in driving more sustainable and resilient infrastructure.

Next Steps

Measuring ESG in infrastructure is complex. Differences in infrastructure types as well as the geographic locations of infrastructure development have significant impacts on ESG. The way that existing regulations interact with infrastructure development varies greatly across the globe. This has direct implications for the role of third-party ESG frameworks in driving sustainable infrastructure. Where regulation is weak on ESG, frameworks and standards have a larger role in delivering ESG reporting and outcomes. The inverse is true for countries where regulation is more mature. These variances have implications for who can take ownership to drive convergence on metrics. Despite these complexities, or perhaps because of them, there is a need for cross-industry collaboration between practitioners and governments to work toward a standard set of ESG metrics.

For the infrastructure industry, it will be key to observe whether the regulatory environment is specific enough, and to apply pressure if this is not the case.

The key to achieving consistency, and to enabling the development of reliable market data, will be standardized definitions of E, S, and G. Global regulatory bodies are starting to call for this consistency. At present, some definitions sit in corporate reporting standards or recommendations, or in established industry practices, such as the UN Principles of Responsible Investment and the UN SDGs. Within the EU, the definition of E is now written into law. Standard-setting bodies are seeking to enhance and align their approaches to corporate reporting, both financial and non-financial. Various global initiatives are underway such as the European Commission's guidelines on non-financial climate-related disclosures and other national bodies refining requirements. Many financial service firms and some collective investment funds are subject to these requirements, which are focused on climate change but increasingly cover a wider range of ESG factors. The EU Taxonomy Regulation has created a direct regulatory link between corporate reporting requirements and wider ESG financial services regulation. For the infrastructure industry, it will be key to observe whether the regulatory environment is specific enough, and to apply pressure if this is not the case.

The urgency to address emerging and evolving risks related to ESG and the speed at which regulators around the world introducing new mandatory requirements suggests a rapid evolutionary pace for ESG in the investor community. As revealed by the Desktop Review, the COVID-19 pandemic has accelerated the push for accountability around ESG impacts. Investor demand has pressured both corporations and regulators to set the baseline and rules for reporting and sustainable investing. Considering the speed of emerging regulations, the focus now should be on making sure that they are well informed and capture stakeholders' perspective. Industry, including the respondents to this survey, still have a chance to influence regulation, but this window is closing. The time for action is now.

Appendix 1: Survey Questions and Data

	Data Users	Data Preparers
Question 1	What best describes your role as a user of ESG data in infrastructure finance? ▪ Debt Investor/Lender ▪ Equity Investor/Owner ▪ Other (please specify)	What best describes your organization as a provider of ESG data to infrastructure investors? ▪ Academic or scientific institution ▪ Consulting firm (not engineering) ▪ Engineering firm ▪ Government/public sector infrastructure asset owner or operator ▪ Private sector infrastructure asset owner or operator ▪ Other (please specify)
Actual Responses	▪ Debt Investor/Lender 6 ▪ Equity Investor/Owner 19 ▪ Other (please specify) 6	▪ Engineering firm 1 ▪ Government/public sector infrastructure asset owner or operator 8 ▪ Private sector infrastructure asset owner or operator 7 ▪ Other (please specify) 3
Question 2	**In which region do you primarily operate?** ▪ Global ▪ North America ▪ South/Latin America ▪ Europe ▪ Middle East/Africa	**In which region do you primarily operate?** ▪ Global ▪ North America ▪ South/Latin America ▪ Europe ▪ Middle East/Africa
Actual Responses	▪ Asia Pacific 8 ▪ Global 7 ▪ North America 4 ▪ South/Latin America 5 ▪ Europe 7	▪ Asia Pacific 6 ▪ Global 1 ▪ North America 3 ▪ South/Latin America 5 ▪ Europe 4
Question 3	**What has been your organization's level of activity in the infrastructure sector over the past 5 years?** ▪ Involved with less than 5 projects ▪ Involved with 6-10 projects ▪ Involved with 11-20 projects ▪ Involved with 21-50 projects ▪ Involved with more than 50 projects	**What has been your organization's level of activity in the infrastructure sector over the past 5 years?** ▪ Involved with less than 5 projects ▪ Involved with 6-10 projects ▪ Involved with 11-20 projects ▪ Involved with 21-50 projects ▪ Involved with more than 50 projects
Actual Responses	▪ Less than 5 3 ▪ 6-10 3 ▪ 11-20 4 ▪ 21-50 11 ▪ More than 50 10	▪ Less than 5 4 ▪ 6-10 2 ▪ 11-20 2 ▪ 21-50 0 ▪ More than 50 11
Question 4	**How satisfied are you with the extent to which you are currently able to integrate ESG data into your infrastructure investment or lending processes and decisions?** ▪ Very satisfied: no improvement is needed ▪ Satisfied: little improvement is needed ▪ Unsatisfied: a fair amount of improvement is needed ▪ Very unsatisfied: significant improvement is needed	**How satisfied are you with the extent to which you are currently able to provide ESG data to infrastructure investors and lenders?** ▪ Very satisfied: no improvement is needed ▪ Satisfied: little improvement is needed ▪ Unsatisfied: a fair amount of improvement is needed ▪ Very unsatisfied: significant improvement is needed
Actual Responses	▪ Very satisfied 3 ▪ Satisfied 12 ▪ Unsatisfied 15 ▪ Very unsatisfied 1	▪ Satisfied 12 ▪ Unsatisfied 7

	Data Users	Data Preparers
Question 5	**Do you think there is an industry consensus on a definition for ESG?** ▪ Yes ▪ No ▪ Don't know (Text box)	**Do you think there is an industry consensus on a definition for ESG?** ▪ Yes ▪ No ▪ Don't know (Text box)
Actual Responses	▪ Yes 9 ▪ No 22	▪ Yes 4 ▪ No 12 ▪ Don't know 3
Question 6	**What do you see as the biggest barriers to fully integrating comprehensive ESG data into your investment or lending decisions? Tick all that apply:** ▪ Data preparers provide inconsistent ESG data (making it difficult to compare and contrast the ESG performance of different infrastructure projects) ▪ Data preparers provide incomplete or poor quality ESG data ▪ It is difficult to access ESG performance data for infrastructure projects, e.g. there is no common platform from which to access ESG data ▪ Data preparers are unaware of, or unable to provide, the ESG data we need as investors or lenders ▪ There are too many ESG reporting frameworks and standards creating confusion in the infrastructure market ▪ ESG data points are often qualitative and difficult to measure ▪ Other (please specify)	**What do you see as the biggest barriers preventing you from providing comprehensive ESG data to infrastructure investors and/or lenders? Tick all that apply:** ▪ There is no standardized way to provide ESG data which makes it difficult to give everyone what they want ▪ It is difficult to access ESG performance data for infrastructure projects, e.g. there is no common platform from which to access ESG data ▪ Investors and lenders are unaware of the practical difficulties of preparing infrastructure ESG performance data ▪ There are too many ESG reporting frameworks and standards creating confusion in the infrastructure market ▪ ESG data points are often qualitative and difficult to measure ▪ Other (please specify)
Actual Responses	▪ Data preparers provide inconsistent ESG data (making it difficult to compare and contrast the ESG performance of different infrastructure projects) 19 ▪ ESG data points are often qualitative and difficult to measure 17 ▪ There are too many ESG reporting frameworks and standards creating confusion in the infrastructure market 17 ▪ It is difficult to access ESG performance data for infrastructure projects, e.g. there is no common platform from which to access ESG data 16 ▪ Data preparers provide incomplete or poor quality ESG data 15 ▪ Data preparers are unaware of or unable to provide the ESG data we need as investors or lenders 14 ▪ Other (please specify) 1	▪ There is no standardized way to provide ESG data which makes it difficult to give everyone what they want 12 ▪ It is difficult to access ESG performance data for infrastructure projects 11 ▪ There are too many ESG reporting frameworks and standards creating confusion in the infrastructure market 9 ▪ Investors and lenders are unaware of the practical difficulties of preparing infrastructure ESG performance data 8 ▪ Other (please specify) 1

	Data Users		Data Preparers	
Question 7	**Which of the following ESG reporting frameworks, standards and labels do you use in your infrastructure investment or lending decisions? Tick all that apply:** ▪ CEEQUAL ▪ Envision ▪ The Global Real Estate Sustainability Benchmark (GRESB) ▪ International Finance Corporation (IFC) Performance Standards ▪ The Standard for Sustainable and Resilient Infrastructure (SuRE) ▪ Infrastructure Sustainability Council of Australia (ISCA) ▪ Commonwealth Development Corporation (CDC) Sustainability Protocol ▪ Greenhouse (GHG) Protocol for Lifecycle Assessment ▪ Sustainability Accounting Standards Board (SASB) - Infrastructure ▪ Task Force of Climate-related Financial Disclosures (TCFD) ▪ Climate Disclosure Standards Board (CDSB) ▪ Global Reporting Initiative (GRI) ▪ World Economic Forum (WEF)/International Business Council (IBC) metrics ▪ United Nations (UN) Principles for Responsible Investment (PRI) ▪ UN Sustainable Development Goals (SDG) Indicators ▪ Science Based Targets Initiative (SBTI) ▪ G20 Quality Infrastructure Investment Principles ▪ Blue Dot Network Certification for Quality Infrastructure Investment ▪ Inter-American Development Bank (IADB) Sustainable Infrastructure Framework ▪ Finance for the Sustainable Transition - Infrastructure (FAST-INFRA) Sustainable Asset Label ▪ Proprietary ESG frameworks ▪ None ▪ Other (please specify)		**Which of the following ESG reporting frameworks, standards and labels do you align your ESG data collection with? Tick all that apply:** ▪ CEEQUAL ▪ Envision ▪ The Global Real Estate Sustainability Benchmark (GRESB) ▪ International Finance Corporation (IFC) Performance Standards/Equator Principles (EPs) ▪ The Standard for Sustainable and Resilient Infrastructure (SuRE) ▪ Infrastructure Sustainability Council of Australia (ISCA) ▪ Commonwealth Development Corporation (CDC) Sustainability Protocol ▪ Greenhouse (GHG) Protocol for Lifecycle Assessment ▪ Sustainability Accounting Standards Board (SASB) - Infrastructure ▪ Task Force of Climate-related Financial Disclosures (TCFD) ▪ Climate Disclosure Standards Board (CDSB) ▪ Global Reporting Initiative (GRI) ▪ World Economic Forum (WEF)/International Business Council (IBC) metrics ▪ United Nations (UN) Principles for Responsible Investment (PRI) ▪ UN Sustainable Development Goals (SDG) Indicators ▪ Science Based Targets Initiative (SBTI) ▪ G20 Quality Infrastructure Investment Principles ▪ Blue Dot Network Certification for Quality Infrastructure Investment ▪ Inter-American Development Bank (IADB) Sustainable Infrastructure Framework ▪ Finance for the Sustainable Transition - Infrastructure (FAST-INFRA) Sustainable Asset Label ▪ Proprietary ESG frameworks ▪ None ▪ Other (please specify)	
Actual Responses	▪ UN SDG Indicators	19	▪ GRI	10
	▪ UN PRI	17	▪ UN SDG Indicators	9
	▪ Proprietary ESG frameworks	16	▪ TCFD	6
	▪ IFC Performance Standards/EPs	12	▪ SBTI	5
	▪ TCFD	12	▪ IFC Performance Standards/EPs	5
	▪ GRESB	12	▪ GHG Protocol for Lifecycle Assessment	5
	▪ SASB - Infrastructure	10	▪ GRESB	5
	▪ SBTI	9	▪ None	4
	▪ GRI	8	▪ ISCA	3
	▪ GHG Protocol for Lifecycle Assessment	5	▪ UN PRI	3
	▪ SuRE	2	▪ IDB	2
	▪ Other (please specify)	2	▪ Other (please specify)	2
	▪ ISCA	2	▪ Proprietary ESG frameworks	2
	▪ IADB	1	▪ SASB - Infrastructure	2
	▪ CDC Sustainability Protocol	1	▪ CEEQUAL	2
	▪ Envision	1	▪ Envision	1
	▪ WEF/IBC metrics	1	▪ CDSB	1
	▪ FAST-INFRA Sustainable Asset Label	0	▪ G20 QII Principles	1
	▪ G20 QII Principles	0	▪ WEF/IBC metrics	1
	▪ CDSB	0	▪ SuRE	0
	▪ CEEQUAL	0	▪ FAST-INFRA Sustainable Asset Label	0
	▪ Blue Dot Network for QII	0	▪ Blue Dot Network for QII	0
	▪ None	0	▪ CDC Sustainability Protocol	0

	Data Users	Data Preparers
Question 8	**How well do current ESG reporting frameworks, standards and principles capture the financial impacts of infrastructure projects on national, regional and local economies?** ▪ Very well ▪ Adequately well ▪ Not very well ▪ Not at all ▪ Don't know	**How well do current ESG reporting frameworks, standards and principles capture the financial impacts of infrastructure projects on national, regional, and local economies?** ▪ Very well ▪ Adequately well ▪ Not very well ▪ Not at all ▪ Don't know
Actual Responses	▪ Very well 1 ▪ Adequately well 4 ▪ Not very well 23 ▪ Not at all 1 ▪ Don't know 2	▪ Adequately well 4 ▪ Not very well 9 ▪ Not at all 3 ▪ Don't know 3
Question 9	**How well do current ESG reporting frameworks, standards and principles capture the environmental impacts of infrastructure projects?** ▪ Very well ▪ Adequately well ▪ Not very well ▪ Not at all ▪ Don't know	**How well do current ESG reporting frameworks, standards, and principles capture the environmental impacts of infrastructure projects on national, regional, and local economies?** ▪ Very well ▪ Adequately well ▪ Not very well ▪ Not at all ▪ Don't know
Actual Responses	▪ Very well 4 ▪ Adequately well 19 ▪ Not very well 7 ▪ Don't know 1	▪ Very well 1 ▪ Adequately well 12 ▪ Not very well 3 ▪ Not at all 1 ▪ Don't know 2
Question 10	**How well do current ESG reporting frameworks, standards and principles capture the social impacts of infrastructure projects?** ▪ Very well ▪ Adequately well ▪ Not very well ▪ Not at all ▪ Don't know	**How well do current ESG reporting frameworks, standards and principles capture the social impacts of infrastructure projects?** ▪ Very well ▪ Adequately well ▪ Not very well ▪ Not at all ▪ Don't know
Actual Responses	▪ Very well 2 ▪ Adequately well 16 ▪ Not very well 11 ▪ Don't know 2	▪ Adequately well 5 ▪ Not very well 12 ▪ Don't know 2
Question 11	**How well do current ESG reporting frameworks, standards and principles capture the quality of governance of infrastructure projects?** ▪ Very well ▪ Adequately well ▪ Not very well ▪ Not at all ▪ Don't know	**How well do current ESG reporting frameworks, standards and principles capture the quality of governance of infrastructure projects?** ▪ Very well ▪ Adequately well ▪ Not very well ▪ Not at all ▪ Don't know
Actual Responses	▪ Very well 2 ▪ Adequately well 12 ▪ Not very well 15 ▪ Don't know 2	▪ Adequately well 11 ▪ Not very well 4 ▪ Not at all 1 ▪ Don't know 3

	Data Users	Data Preparers
Question 12	**Which of the environmental impacts below does your organization assign the most weight to when evaluating infrastructure projects? (Please rank in order of weight applied, with 1 being the most weight assigned and 11 being the least weight assigned)** ▪ Air pollution ▪ Biodiversity and ecosystem impacts ▪ Climate risk/resilience to climate change ▪ GHG emissions/energy efficiency ▪ Land/Soil contamination/degradation ▪ Land use/conversion ▪ Light pollution ▪ Resource use/circular economy ▪ Water efficiency ▪ Water pollution In case any environmental impact category is missing feel free to add it here and elaborate (Text box)	**Which of the environmental impacts below does your organization assign the most weight to when evaluating infrastructure projects? (Please rank in order of weight applied, with 1 being the most weight assigned and 11 being the least weight assigned)** ▪ Air pollution ▪ Biodiversity and ecosystem impacts ▪ Climate risk/resilience to climate change ▪ GHG emissions/energy efficiency ▪ Land/Soil contamination/degradation ▪ Land use/conversion ▪ Light pollution ▪ Resource use/circular economy ▪ Water efficiency ▪ Water pollution In case any environmental impact category is missing feel free to add it here and elaborate (Text box)
Actual Responses	▪ Climate risk or resilience to climate change 47 ▪ GHG emissions or energy efficiency 63 ▪ Biodiversity and ecosystem impacts 66 ▪ Land/Soil contamination or degradation 81 ▪ Air pollution 82 ▪ Land use or conversion 88 ▪ Water pollution 102 ▪ Resource use or circular economy 86 ▪ Water efficiency 97 ▪ Light pollution 110	▪ Climate risk or resilience to climate change 47 ▪ GHG emissions or energy efficiency 48 ▪ Biodiversity and ecosystem impacts 47 ▪ Water pollution 44 ▪ Air pollution 52 ▪ Land use or conversion 56 ▪ Water efficiency 67 ▪ Resource use or circular economy 57 ▪ Land/Soil contamination or degradation 60 ▪ Light pollution 76
Question 13	**Which of the categories below does your organization assign the most weight to when evaluating an infrastructure project's social impacts? (Please rank in order of weight applied, with 1 being the most weight applied and 11 being the least weight assigned)** ▪ Community outreach and involvement ▪ Diversity and inclusion ▪ Employment opportunities ▪ Human capital development, inc. training and education ▪ Impact on Indigenous peoples and local communities ▪ Labor relations and well-being ▪ Modern slavery ▪ Public health and safety ▪ Working conditions ▪ Working in conflict regions In case any social impact category is missing feel free to add it here and elaborate (Text box)	**Which of the social impacts below does your organization assign the most weight to when evaluating infrastructure projects? (Please rank in order of weight applied, with 1 being the most weight assigned and 11 being the least weight assigned)?** ▪ Community outreach and involvement ▪ Diversity and inclusion ▪ Employment opportunities ▪ Human capital development, inc. training and education ▪ Impact on Indigenous peoples and local communities ▪ Labor relations and well-being ▪ Modern slavery ▪ Public health and safety ▪ Working conditions ▪ Working in conflict regions In case any social impact category is missing feel free to add it here and elaborate (Text box)
Actual Responses	▪ Public health and safety 50 ▪ Diversity and inclusion 74 ▪ Impact on Indigenous peoples and local communities 55 ▪ Community outreach and involvement 73 ▪ Labor relations and well-being 75 ▪ Modern slavery 86 ▪ Human capital development, inc. training and education 81 ▪ Employment opportunities 68 ▪ Working conditions 82 ▪ Working in conflict regions 101	▪ Community outreach and involvement 40 ▪ Diversity and inclusion 62 ▪ Impact on Indigenous peoples and local communities 67 ▪ Employment opportunities 46 ▪ Human capital development, inc. training and education 50 ▪ Modern slavery 65 ▪ Labor relations and well-being 46 ▪ Public health and safety 29 ▪ Working conditions 33 ▪ Working in conflict regions 52

	Data Users	Data Preparers
Question 14	**How important does your organization find DATA SECURITY AND CYBERSECURITY when evaluating the impact of infrastructure projects?** ▪ Very important ▪ Adequately important ▪ Not very important ▪ Not at all important	**How important does your organization find DATA SECURITY AND CYBERSECURITY when evaluating the impact of infrastructure projects?** ▪ Very important ▪ Adequately important ▪ Not very important ▪ Not at all important
Actual Responses	▪ Adequately important 13 ▪ Very important 18	▪ Adequately important 7 ▪ Not very important 3 ▪ Very important 9
Question 15	**How effective is government policy and/or regulation in driving ESG reporting in infrastructure?** ▪ Very effective ▪ Adequately effective ▪ Not very effective ▪ Not at all effective	**How effective is government policy and/or regulation in driving ESG reporting in infrastructure?** ▪ Very effective ▪ Adequately effective ▪ Not very effective ▪ Not at all effective
Actual Responses	▪ Very effective 4 ▪ Adequately effective 10 ▪ Not very effective 16 ▪ Not at all effective 1	▪ Very effective 2 ▪ Adequately effective 6 ▪ Not very effective 10 ▪ Not at all effective 1
Question 16	**How well do current ESG reporting standards and principles capture the ESG-related financial risks of infrastructure projects considering both transition risks (societal changes as a result of climate change e.g. policy changes impacting infrastructure projects) and physical risks (direct damage or supply chain disruptions as a result of climate change impacting infrastructure sprojects)?** ▪ Very well ▪ Adequately well ▪ Not very well ▪ Not at all	**How well do current ESG reporting standards and principles capture the ESG-related financial risks of infrastructure projects considering both transition risks (societal changes as a result of climate change e.g. policy changes impacting infrastructure projects) and physical risks (direct damage or supply chain disruptions as a result of climate change impacting infrastructure projects)?** ▪ Very well ▪ Adequately well ▪ Not very well ▪ Not at all
Actual Responses	▪ Adequately well 9 ▪ Not very well 21 ▪ Not at all 1	▪ Very well 2 ▪ Adequately well 6 ▪ Not very well 11
Question 17	**Do you typically ask data preparers for third party independent assurance on the ESG data they provide to you?** ▪ Always ▪ Often ▪ Sometimes ▪ Rarely ▪ Never	**Do you typically secure third party independent assurance on the ESG data you provide to your investors and lenders?** ▪ Always ▪ Often ▪ Sometimes ▪ Rarely ▪ Never
Actual Responses	▪ Always 1 ▪ Often 10 ▪ Sometimes 13 ▪ Rarely 3 ▪ Never 4	▪ Always 2 ▪ Often 7 ▪ Sometimes 2 ▪ Rarely 3 ▪ Never 5

	Data Users	Data Preparers
Question 18	**How much engagement do you have with infrastructure data preparers about the ESG data you want or need from them?** ▪ A high level of engagement ▪ Moderate engagement ▪ Limited engagement ▪ No engagement	**How much engagement do you have with investors and lenders about the ESG data they want or need from you?** ▪ A high level of engagement ▪ Moderate engagement ▪ Limited engagement ▪ No engagement
Actual Responses	▪ A high level of engagement 6 ▪ Moderate engagement 14 ▪ Limited engagement 8 ▪ No engagement 3	▪ A high level of engagement 6 ▪ Moderate engagement 6 ▪ Limited engagement 5 ▪ No engagement 2
Question 19	**Do you engage more with data preparers about climate-related issues than other ESG issues?** ▪ Yes ▪ No ▪ Don't know	**Do you engage more with investors and lenders about climate-related issues than other ESG issues?** ▪ Yes ▪ No ▪ Don't know
Actual Responses	▪ Yes 20 ▪ No 10 ▪ Don't know 1	▪ Yes 11 ▪ No 5 ▪ Don't know 3
Question 20	**How well equipped are infrastructure DEVELOPERS to provide investors and lenders with ESG data on planned infrastructure projects?** ▪ Very well prepared ▪ Adequately prepared ▪ Not well prepared ▪ Not at all well prepared ▪ Don't know	**How well equipped are infrastructure DEVELOPERS to provide investors and lenders with ESG data on planned infrastructure?** ▪ Very well prepared ▪ Adequately prepared ▪ Not well prepared ▪ Not at all well prepared ▪ Don't know
Actual Responses	▪ Adequately prepared 11 ▪ Don't know 1 ▪ Not at all well prepared 2 ▪ Not well prepared 7	▪ Adequately prepared 6 ▪ Don't know 3 ▪ Not at all well prepared 1 ▪ Not well prepared 9
Question 21	**How well equipped are infrastructure OPERATORS to provide investors and lenders with ESG operating data on existing projects?** ▪ Very well prepared ▪ Adequately prepared ▪ Not well prepared ▪ Not at all well prepared ▪ Don't know	**How well equipped are infrastructure OPERATORS to provide investors and lenders with ESG operating data on existing projects?** ▪ Very well prepared ▪ Adequately prepared ▪ Not well prepared ▪ Not at all well prepared ▪ Don't know
Actual Responses	▪ Adequately prepared 16 ▪ Not at all well prepared 3 ▪ Not well prepared 12	▪ Adequately prepared 7 ▪ Don't know 3 ▪ Not at all well prepared 2 ▪ Not well prepared 7

	Data Users	Data Preparers
Question 22	**How well equipped are infrastructure OWNERS to provide investors and lenders with ESG operating data on existing projects?** ▪ Very well prepared ▪ Adequately prepared ▪ Not well prepared ▪ Not at all well prepared ▪ Don't know	**How well equipped are infrastructure OWNERS to provide investors and lenders with ESG operating data on existing projects?** ▪ Very well prepared ▪ Adequately prepared ▪ Not well prepared ▪ Not at all well prepared ▪ Don't know
Actual Responses	▪ Adequately prepared 14 ▪ Don't know 2 ▪ Not at all well prepared 2 ▪ Not well prepared 10 ▪ Very well prepared 3	▪ Adequately prepared 7 ▪ Don't know 1 ▪ Not at all well prepared 2 ▪ Not well prepared 9
Question 23	**Would there be a benefit from adopting a standardized baseline set of ESG metrics in the infrastructure asset lifecycle? Tick all that apply:** ▪ Yes, standardized ESG metrics would be beneficial in infrastructure in the planning & design phase ▪ Yes, standardized ESG metrics would be beneficial in infrastructure in the construction phase ▪ Yes, standardized ESG metrics would be beneficial in infrastructure in the operation phase ▪ Yes, standardized ESG metrics would be beneficial in infrastructure in the decommissioning phase ▪ No, standardized ESG metrics would not be beneficial at any stage in the infrastructure asset lifecycle	**Would there be a benefit from adopting a standardized baseline set of ESG metrics in the infrastructure asset lifecycle? Tick all that apply:** ▪ Yes, standardized ESG metrics would be beneficial in infrastructure in the planning & design phase ▪ Yes, standardized ESG metrics would be beneficial in infrastructure in the construction phase ▪ Yes, standardized ESG metrics would be beneficial in infrastructure in the operation phase ▪ Yes, standardized ESG metrics would be beneficial in infrastructure in the decommissioning phase ▪ No, standardized ESG metrics would not be beneficial at any stage in the infrastructure asset lifecycle
Actual Responses	▪ Yes, in the construction phase 27 ▪ Yes, in the planning & design phase 27 ▪ Yes, in the operation phase 26 ▪ Yes, in the decommisioning phase 24 ▪ No, not at any stage 5	▪ Yes, in the planning & design phase 19 ▪ Yes, in the operation phase 18 ▪ Yes, in the construction phase 17 ▪ Yes, in the decommisioning phase 16 ▪ No, not at any stage 3
Question 24	**What are the most effective mechanisms to improve the integration of ESG into infrastructure investment and lending?** **Please rank in order of effectiveness with 1 being the most effective and 5 being the least effective.** ▪ National and/or regional regulation mandating ESG reporting for the infrastructure sector ▪ Simplified and/or standardized ESG reporting frameworks, labeling, certifications and standards ▪ Greater pressure from investors and lenders for ESG data/ more demanding ESG investment/lending policies ▪ More pressure from campaigners (e.g. NGOs and the media) and civil society ▪ Other Or ▪ No further improvement is needed in the integration of ESG into infrastructure investment and lending	**What are the most effective mechanisms to improve the integration of ESG into infrastructure investment and lending?** **Please rank in order of effectiveness with 1 being the most effective and 5 being the least effective.** ▪ National and/or regional regulation mandating ESG reporting for the infrastructure sector ▪ Simplified and/or standardized ESG reporting frameworks, labeling, certifications and standards ▪ Greater pressure from investors and lenders for ESG data/ more demanding ESG investment/lending policies ▪ More pressure from campaigners (e.g. NGOs and the media) and civil society ▪ Other Or ▪ No further improvement is needed in the integration of ESG into infrastructure investment and lending
Actual Responses	▪ Pressure from civil society 77 ▪ Pressure from investors or lendors 55 ▪ Regulation mandating reporting 47 ▪ Simplification or standardization 47	▪ Regulation mandating reporting 23 ▪ Simplification or standardization 28 ▪ Pressure from investors or lendors 31 ▪ Pressure from civil society 43

	Data Users	Data Preparers
Question 25	**Do you have, or do you plan to develop, a bespoke ESG infrastructure assessment tool for your organization?**	
Actual Responses	▪ Yes 20 ▪ No 11	
Question 26	**If you answered "yes" to the previous question, how important is it to have your own ESG assessment approach for infrastructure in order to differentiate your organization in the market?**	
Actual Responses	▪ Very important 15 ▪ Important 1 ▪ Not very important 3 ▪ N/A 11	

Appendix 2: Industry Interviews

Data Users

Questions	**Q1:** How are you integrating ESG data into your infrastructure investment and lending decisions? And how important is it for you, and why?	**Q2:** What are the biggest challenges that you face in integrating ESG data into your infrastructure investment and lending decisions? And what are the possible solutions to these challenges?	**Q3:** There exists a multitude of different ESG reporting frameworks, standards and principles. Are the current standards/ frameworks/principles/ tools adequate? If not, how big a problem is this for you as an investor/lender and what should be done about it?	**Q4:** Would a consistent ESG reporting standard or approach for the infrastructure sector be helpful to investors/ lenders? Is there a reporting framework that stands out for use in infrastructure investment and why?	**Q5:** What else can be done – and by whom – to accelerate and improve the integration of ESG data into infrastructure investing/ lending decisions? What would be the most effective tools to drive progress?
Overall Themes	Most respondents rely on a mix of existing frameworks depending on the type of asset(s). Internal capabilities and having a bespoke framework can be a competitive advantage.	Data availability in private investments is challenging. Lack of quality data availability is a general challenge.	There are many good frameworks out there for specific purposes.	Yes, it would be good to move towards some base level of standardization.	There needs to be more push from stakeholders like government, investors and asset managers to drive consensus on ESG data.
Data User 1	Data User 1 uses a cluster of sources for gathering ESG data. They do this at two different points in the transaction life cycle: 1) during due diligence and 2) where they rely heavily on asset management teams. They are looking for sources that give them information they do not have.	From a process perspective there are none. It comes down to the quality of information and the need to rely on projections and scenarios like potential technological change and availability over time.	In Data User 1's opinion, platforms that rely on questionnaires and publicly available information will never be as good as what can be produced when there is access to information. The frameworks are only as good as the data source.	Yes, we should standardize and aim for that. Standardization is only as good as what goes in.	There are a number of aspects that impact standardization within Data User 1's sphere of operation. From their perspective, this is influenced by the competencies of their team.
Data User 2	Data User 2 uses an advisory company that has a standard approach based on the SDGs with a set of standardized KPIs.	Data User 2 reports to have challenges with gathering ESG data from the government. For private investments there is enough data but not for public investments.	Data User 2 relies on SDGs and other publicly available frameworks, but it is currently considered insufficient. One of the challenges they have noticed is a lack of vendors ready to certify "green-ness" of the asset.	Data User 2 reports that they would benefit from having a consistent, industry-specific, standardized approach.	It is relatively difficult for lenders to obtain climate-related information from governmental bodies. For Data User 2, it is extremely important to get third-party certification of an asset to meet "green" requirements.

Data Users

Questions	**Q1:** How are you integrating ESG data into your infrastructure investment and lending decisions? And how important is it for you, and why?	**Q2:** What are the biggest challenges that you face in integrating ESG data into your infrastructure investment and lending decisions? And what are the possible solutions to these challenges?	**Q3:** There exists a multitude of different ESG reporting frameworks, standards and principles. Are the current standards/ frameworks/principles/ tools adequate? If not, how big a problem is this for you as an investor/lender and what should be done about it?	**Q4:** Would a consistent ESG reporting standard or approach for the infrastructure sector be helpful to investors/ lenders? Is there a reporting framework that stands out for use in infrastructure investment and why?	**Q5:** What else can be done – and by whom – to accelerate and improve the integration of ESG data into infrastructure investing/ lending decisions? What would be the most effective tools to drive progress?
Data User 3	Data User 3 works with a long list of thousands of companies which they exclude and thus, can not interact with.	Private equity houses that go out to the market to make private debt are not caught by specific markets or specific geographical spread. There is no standard – e.g., if Data User 3 goes to the market to raise private debt, it is not clear what they need.	In terms of infrastructure data, Data User 3 loosely bases their investments on GRESB. It's not an investment framework but it points out data points that will be useful in the management of an asset.	[No response]	Data User 3 believes that there needs to be far more pressure on asset managers to come together and demand the same data from issuers.
Data User 4	Data User 4 takes a fully integrated approach to ESG factors, and these are absolutely essential to their diligence. They have 'stolen' the very best from GRESB, SASB and others and have created their own framework based on this.	Data user 4 states that if it was all there, it would be very straightforward, but it's not all there. This gives them potential opportunities, as it's a maturing market.	A lot of them are adequate, if you go through GRI you'll see a lot of the same. Data User 4 states that one can hone out what's of interest since they are only active in a few sectors like infra. They don't do all of them but based on what is most material they use for instance SESB or GRESB.	Data User 4's view is to take a few of the standards that are out there. They think GRI is great and that SESB and GRESB are good for different purposes.	Data User 4 states that, as an ex-government employee, some light regulation is moving the dial and they think this is powerful. What happens in public companies very quickly flows into private companies.
Data User 5	Data User 5 states that they made their own internal framework of the 12 most material aspects. They designed it from scratch but based on 10 years of ESG investment experience and also including stakeholder workshops.	Data User 5 believes they need to go much deeper in the private market investment since there is a lot of money involved. They do a lot of diligence when doing private market investment, and they consider it to be a lack of ESG data available.	Data User 5 has decided not to have any internal tool but to focus only on GRESB and let it "talk for them". They think it's powerful and that we should keep supporting it.	There are so many metrics, and abbreviations etc., which are all new for private equity. Maybe a standardized way of ESG reporting would be the thing that's necessary.	Infrastructure is 5-10 years behind real estate on ESG data, and Data User 5 is expecting to be doing the same, but then we are just behind. There is no collaborative competition so far in infrastructure. No one is doing it intentionally.

Data Users

Questions	**Q1:** How are you integrating ESG data into your infrastructure investment and lending decisions? And how important is it for you, and why?	**Q2:** What are the biggest challenges that you face in integrating ESG data into your infrastructure investment and lending decisions? And what are the possible solutions to these challenges?	**Q3:** There exists a multitude of different ESG reporting frameworks, standards and principles. Are the current standards/ frameworks/principles/ tools adequate? If not, how big a problem is this for you as an investor/lender and what should be done about it?	**Q4:** Would a consistent ESG reporting standard or approach for the infrastructure sector be helpful to investors/ lenders? Is there a reporting framework that stands out for use in infrastructure investment and why?	**Q5:** What else can be done – and by whom – to accelerate and improve the integration of ESG data into infrastructure investing/ lending decisions? What would be the most effective tools to drive progress?
Data User 6	Compliance is the main driving factor behind ESG. Data user 6 has significant investments in renewable energy infrastructure. The kind of data collected depends heavily on project lifecycle stage and location. They utilize a bespoke tool. It is open sourced and used to quantify environmental and social impact.	Challenges depend on the asset class. Data user 6 has an annual data collection process. If data is not received, it is assumed that there is a lack of data availability/ measurement at the asset.	[No response]	It would be helpful to get to a point where ESG data better reflects enterprise values. Data user 6 only invest in assets that they believe will be part of enabling a just energy transition.	There is a need for consensus on what will facilitate a just energy transition to a net zero economy.

Data Preparers

Questions	**Q1:** How are you integrating ESG data into your infrastructure development work (i.e., reporting, design, decision making)? And how important is it for you?	**Q2:** What are the biggest challenges that you face in preparing infrastructure ESG data for your investors and lenders? And what are the possible solutions to these challenges?	**Q3:** There exists a multitude of different ESG reporting frameworks, standards and principles. Are the current standards/ frameworks/principles/ tools adequate? If no, how big a problem is this for you and what should be done about it? Is there a reporting framework that stands out for use in infrastructure and why?	**Q4:** Would a consistent ESG reporting standard or approach for the infrastructure sector be helpful to you? If not, why not? If yes, why? What are the practical challenges or barriers preventing such convergence and consistency in ESG reporting in the sector?	**Q5:** What more can be done – and by whom – to accelerate and improve the reporting of ESG data to infrastructure investors/ lenders? What would be the most effective tools to drive progress?
Overall Themes	Most respondents use bespoke frameworks to align with their unique agency priorities. Sometimes these frameworks align with government policies or the SDGs.	Collecting ESG data is the biggest challenge but is easier for some types of metrics than others.	The different scales (i.e., asset vs portfolio) that data users and preparers work at, makes landing on a single framework challenging.	There is a need for a shared ESG definition and defined metrics.	There needs to be more push from stakeholders like government, investors and asset managers to drive consensus on ESG data.
Data Preparer 1	Bespoke ESG Evaluation Framework with annual reporting.	Quality, flow, and speed of collection of data.	The main challenge in ESG reporting is data collection. Digital tools, as opposed to more frameworks, could be useful in filling this gap.	Currently, different stakeholders are misaligned, and there is a need for shared priorities and ESG metrics.	[No response]
Data Preparer 2	Several frameworks are used: GRI Index, alignment with SDGs, TCFD, SASB, and a bespoke framework.	Data sharing, aligning reporting with business objectives.	Integration across reporting frameworks would be helpful in support of a move toward mandatory, integrated reporting.	Standardization of metrics and mandatory reporting would be useful, but there still needs to be room for different parties to report on the metrics that are most relevant to them.	The onus to some degree is on the individual companies, however there would likely be value in governance and oversight – someone needs to decide what data preparers are reporting on/what the key metrics are.

Data Preparers

Questions	**Q1:** How are you integrating ESG data into your infrastructure development work (i.e., reporting, design, decision making)? And how important is it for you?	**Q2:** What are the biggest challenges that you face in preparing infrastructure ESG data for your investors and lenders? And what are the possible solutions to these challenges?	**Q3:** There exists a multitude of different ESG reporting frameworks, standards and principles. Are the current standards/ frameworks/principles/ tools adequate? If no, how big a problem is this for you and what should be done about it? Is there a reporting framework that stands out for use in infrastructure and why?	**Q4:** Would a consistent ESG reporting standard or approach for the infrastructure sector be helpful to you? If not, why not? If yes, why? What are the practical challenges or barriers preventing such convergence and consistency in ESG reporting in the sector?	**Q5:** What more can be done – and by whom – to accelerate and improve the reporting of ESG data to infrastructure investors/ lenders? What would be the most effective tools to drive progress?
Data Preparer 3	Data Preparer 3 is advocating to better embed ESG requirements into policy, to shift away from private sector driving, and increase transparency/ accountability in ESG reporting.	There is no baseline, or clear system for measuring against global targets.	Not having enough standards isn't the issue; the main challenge is determining the overall objective and having accountability. Common metrics (and definitions of those metrics) is needed.	Overall objectives and principles must be agreed upon. If metrics were agreed, this would allow for numerous standards that all support the overarching global goals to ensure ESG impact.	Government needs to have some level of ownership to allow for the outcomes that society at large is looking for.
Data Preparer 4	Requirements on projects are tied to legislative requirements.	Requirements are embedded in procurement as contractual requirements. This can be easier for some metrics (e.g., energy requirements) and more difficult for others (e.g. labour requirements).	LEED is commonly utilized, at least in buildings projects.	Policy provides the benchmark and priorities are politically driven – standardization and transparency in reporting could be helpful.	To better address ESG outcomes, the impetus would likely need to come from government, top down (starting at the federal level); however, different governments have different priorities, and authority; coordination between provinces is extremely challenging.
Data Preparer 5	Bespoke rating system	Capturing and assurance of data. Digital tools could help to streamline this process.	The key issue is that users and preparers often work at different scales (e.g., asset vs portfolio of assets) which means the types of standards and frameworks that are useful are different.	Yes, a standard approach would be helpful. A clear and shared definition of ESG is important.	Government has a role to play, but all stakeholders need to participate.
Data Preparer 6	Bespoke tool. Environmental impacts are considered more than S/G.	Because tool is bespoke and established, there are no major challenges.	The respondent uses an internal framework, and they are generally easy to use/there are no major complaints about using them.	Further development of standards would be beneficial to ESG outcomes; there is a need for more specificity and maturity of metrics.	[No response]

Data Preparers

Questions	**Q1:** How are you integrating ESG data into your infrastructure development work (i.e., reporting, design, decision making)? And how important is it for you?	**Q2:** What are the biggest challenges that you face in preparing infrastructure ESG data for your investors and lenders? And what are the possible solutions to these challenges?	**Q3:** There exists a multitude of different ESG reporting frameworks, standards and principles. Are the current standards/ frameworks/principles/ tools adequate? If no, how big a problem is this for you and what should be done about it? Is there a reporting framework that stands out for use in infrastructure and why?	**Q4:** Would a consistent ESG reporting standard or approach for the infrastructure sector be helpful to you? If not, why not? If yes, why? What are the practical challenges or barriers preventing such convergence and consistency in ESG reporting in the sector?	**Q5:** What more can be done – and by whom – to accelerate and improve the reporting of ESG data to infrastructure investors/ lenders? What would be the most effective tools to drive progress?
Data Preparer 7	Implemented in procurement through contracts based on bespoke design criteria.	Institutional challenges – not everyone is on board with ESG. Data collection can also be challenging.	There is no simple way of setting a universal baseline due to geographical/cultural differences.	There would be significant challenges in establishing a standard across the infrastructure sector. It would be important to put reporting metrics into local context.	[No response]
Data Preparer 8	Bespoke reporting framework aligned with the SDGs.	Collecting ESG data is the main challenge. Also, given long lifecycle of infrastructure, it is difficult to keep up with evolving best practice in the reporting framework (e.g., carbon accounting methodologies have improved dramatically).	Many frameworks weren't developed to assess single assets. SDGs are good for communication, but do not meet the demand for reporting on hard data.	We can't wait for the perfect reporting framework – there is a need for urgent action.	[No response]

Appendix 3: Glossary of Terms

AR6 – Sixth Assessment Report (in relation to IPCC's most recent climate change reporting)

CDSB – Climate Disclosure Standards Board (this is an international consortium of business, environmental and social NGOs, committed to advancing and aligning the global mainstreaming of climate reporting and disclosures)

CEEQUAL – a sustainability assessment, rating and awards scheme for civil engineering, infrastructure, landscaping and public realm projects

COVID-19 – the coronavirus pandemic and health crisis

Data Preparer(s) – asset designers, owners, developers, and/or operators in the public and private sectors, as well as academics and think-tanks

Data User(s) – lenders and/or investors

Envision – a rating system comprising a flexible series of criteria and performance objectives to aid decision makers and help project teams identify sustainable approaches during planning, design and construction of infrastructure projects

EP(s) – Equator Principles

ESG – refers to the three central factors for measuring the sustainability impact of an investment in a company or business: environment, social, governance. ESG frameworks have been adopted following the formation of the United Nations' Principles for Responsible Investment, the leading global network of investors to demonstrate their commitment to responsible investment and the incorporation of sustainability topics into the investment process

EU – European Union

GHG – greenhouse gas

GRI – Global Reporting Initiative

GRESB – Global Real Estate Sustainability Benchmark (this is the global standard for portfolio-level ESG reporting in the real estate sector)

Guggenheim – Guggenheim Investments. Guggenheim Investments represents the following affiliated investment management businesses of Guggenheim Partners, LLC: Guggenheim Partners Investment Management, LLC, Security Investors, LLC, Guggenheim Funds Distributors, LLC, Guggenheim Funds Investment Advisors, LLC, Guggenheim Partners Advisors, LLC, Guggenheim Corporate Funding, LLC, Guggenheim Partners Europe Limited, Guggenheim Partners Fund Management (Europe) Limited, Guggenheim Partners Japan Limited, GS GAMMA Advisors, LLC, and Guggenheim Partners India Management.

G20 – Group of Twenty (an intergovernmental forum comprising 19 countries and the European Union working to address major issues of sustainability)

G20 QII – G20 Principles for Quality Infrastructure Investment (a set of voluntary, non-binding principles that reflect an accepted common strategic direction and aspiration for quality infrastructure)

IFC PS/EP – International Finance Corporation Performance Standards and Equator Principles. For the purpose of this report, we are considering IFC PS/EP as one standard because of the interlinkages between the two.

IPCC – Intergovernmental Panel on Climate Change

Paris Agreement – a legally binding international treaty on climate change adopted by 196 Parties at COP 21 in Paris, on 12 December 2015

SASB – Sustainability Accounting Standards Board

SBTi – Science Based Targets Initiative

SDGs – Sustainable Development Goals (of the UN)

Sustainability – a broad concept seeking to balance the needs of current generations with those of future generations across the thematic areas of society, the environment and the economy. The most common ways that sustainability standards have been incorporated into the investment decision-making process of institutional investors has been through the adoption of Environmental Social Governance (ESG) frameworks that structure sustainability information and provide a framework to identify sustainability risks and opportunities. In this report we use sustainability when we refer to the broader concept of wellbeing of people and planet. We use ESG when we talk about the three topic structure that is often used in the investment community to disclose and apply sustainability information

UN – United Nations

UN PRI – UN sponsored Principles for Responsible Investment

WEF IBC – World Economic Forum's Annual Meeting of the New Champions (bringing together top leaders in sustainable business)

WWF – World Wildlife Fund, Inc., a Delaware non-stock corporation with principal offices at 1250 24th Street, NW, Washington DC 20037

Important Notices and Disclosures

This report was commissioned by and paid for by Guggenheim Partners Investment Management, LLC ("Guggenheim") and WWF (the "Sponsors"). However, this report represents an analysis that was undertaken independently from the Sponsors and does not represent, nor should it be construed as views of the Sponsors or any of their respective executives, directors, or affiliates and is not related to any investment strategy or product offered by either Sponsor . The Sponsors are sponsors, but not authors, of this report, and the Sponsor's participation in the report is not an endorsement or recommendation of the report or the project. No representation or warranty is made by Guggenheim or WWF as to the sufficiency, relevance, importance, appropriateness, completeness, or comprehensiveness of the information contained in this report for any specific purpose. Neither Guggenheim nor WWF guarantees the accuracy or completeness of such information, and neither assumes any liability for damages resulting from or arising out of the use of such information.

The opinions, summaries, findings and conclusions reflect solely the views collected by KPMG Advisory N.V. based on a desktop review, the interviews and the surveys. The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although the author endeavoured to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

The research provided herein should not be considered as a complete analysis of every material fact regarding the topic(s) reviewed herein. Forward looking statements, estimates, opinions and certain information contained herein are subject to change without notice. Information contained herein has been obtained from sources believed to be reliable but are not assured as to accuracy. Past performance is not indicative of future results. There is neither representation nor warranty as to the current accuracy of, nor liability for, decisions based on such information.

This material is distributed or presented for informational or educational purposes only and should not be considered a recommendation of any particular security, strategy or investment product, or as investing advice of any kind. Investing involves risk, including the possible loss of principal. This material is not provided in a fiduciary capacity, may not be relied upon for or in connection with the making of investment decisions, and does not constitute a solicitation of an offer to buy or sell securities.

The content contained herein is not intended to be and should not be construed as legal or tax advice and/or a legal opinion. Always consult a financial, tax and/or legal professional regarding your specific situation.

53508