



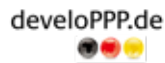
International Standards for Sustainable Infrastructure: An overview

By the Sustainable Infrastructure Alliance (SIA)





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The authors are responsible for the content of this publication as at April 2020.

A photograph of a modern city street. On the right, a tall, modern glass skyscraper with a grid-like facade rises into a clear blue sky with some light clouds. The street is wide and paved, with white lane markings and arrows pointing forward. A few cars are visible in the distance. Lush green trees and bushes line the sides of the road. The overall scene is bright and clear, suggesting a sunny day.

International Standards for Sustainable Infrastructure: An overview

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April 2020

By the Sustainable Infrastructure Alliance (SIA)

About SIA

The Sustainable Infrastructure Alliance (SIA) is a Strategic Alliance with partnership among the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, ecos AG/Global Infrastructure Basel Foundation (GIB), SGS-CSTC Standards Technical Services Co., Ltd. (SGS), true&fair.expert and TÜV NORD Indonesia. The partnership aims to create a market for sustainable infrastructure standards based on Environmental, Social, and Governance (ESG) criteria in China, India and Indonesia. The SIA has been approved by the German Federal Ministry for Economic Cooperation and Development (BMZ) in the context of the developPPP.de programme.

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Executive summary and abstract

Purpose of the paper: Infrastructure investments are inherently long-lasting and, taken as a whole, infrastructure has a profound impact on the economies, environment, and society of the places where they are located. Decisions taken at the planning and investment stage of the infrastructure sector—such as in roads or energy facilities—often have implications that last for generations, and guide settlement and economic patterns decades after the initial asset has reached the end of its usable life. Yet only in recent decades have investors begun to take explicit account of environmental, social, and governance (ESG) factors for this asset class, and the degree of consideration varies. This paper outlines the importance of explicitly taking ESG factors into account at the planning and investment stage, discusses the trends in this regard based on existing literature and evidence, and lays out the current status of standards that can help investors include ESG analysis on a consistent basis. The paper places a special emphasis on emerging economies and developing countries where, until recently, investors have considered ESG factors less prominently than in Europe or North America—even though these are the regions where new infrastructure is most needed, and where large-scale infrastructure investment will likely focus in the coming decades.

Genesis of the study: This study has been completed by the Sustainable Infrastructure Alliance (SIA), a strategic alliance between the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and ecos AG/ Global Infrastructure Basel (GIB) Foundation. The SIA has been approved by the German Federal Ministry for Economic Cooperation and Development (BMZ) in the context of the develoPPP.de programme. The SIA seeks to build a market for infrastructure sustainability standards through:

1. **Creating Incentives:** To develop the business case for sustainable infrastructure with its stakeholders, the SIA engages with financiers, project developers, and the public sector to identify the tangible economic benefits of considering ESG factors in infrastructure project lifecycles.
2. **Upgrading the ESG profile of infrastructure projects:** The SIA identifies infrastructure projects to undergo a sustainability assessment, on the basis of which the SIA develops recommendations and carries out capacity building to upgrade the ESG profile of these selected infrastructure projects.
3. **Building the market for local ESG certification:** The SIA selects certification bodies active in major Asian developing countries and provides training for these institutions to conduct audits in line with international sustainability standards. Certification bodies will then apply these standards to pilot projects in target countries.
4. **Research and knowledge transfer:** The SIA carries out research in the field of sustainable infrastructure and effectively transfers its knowledge to stakeholders in this field.

Main findings: Based on literature and cases evaluated here, we conclude that investors are likely to see increasing value in accounting for ESG factors in infrastructure investments. First, infrastructure investment decisions must account for ESG factors because of the long-lasting nature of the investments, meaning that analysis of present regulations or standard industry practices is insufficient to determine the likely returns given trends towards increasingly tight regulation and policy attention to environmental and social factors. Second, investors worldwide, and particularly in large international financial institutions and multilateral development banks, are increasingly including ESG factors in investment decisions and analysis, which affects asset valuation globally. Third, there is evidence that including ESG factors in investment decisions leads to better operational and financial performance over time, due to reduced risk and greater potential for enhanced revenue.

Glossary and Definitions

This chapter presents different definitions for better understanding of the paper.

Definition of ESG

ESG stands for environment, social, and governance. Although the term ESG is widely used by investors, project owners and investors, and NGOs, there exists no commonly accepted or international definition of ESG. ESG typically refers to the performance of a company, asset, project, security, fund, or other investment in terms of environmental sustainability, social sustainability, and governance metrics. A wide variety of different metrics exist, as this report will discuss in greater detail.

ESG definition and examples

	Environment (E)	Social (S)	Governance (G)
Definition	Refers to the environmental impact, and any efforts to reduce pollution or carbon emissions of an investment.	Refers to the social responsibility, the workplace mentality, and any relationships surrounding the community.	Refers to sustainable management, the company's or institution's policies, as well as relationship between management and stakeholders.
Examples (ESG Criteria)	Resource use, energy efficiency, waste management, water management, deforestation, greenhouse gas emissions.	Employee relations and diversity, working conditions, human rights, local communities, health and safety.	Corporate values, board structure, management compensation, stakeholder impact, stakeholder rights.

Source: Based on UN Global Compact "Who Cares Wins," 2005

ESG factors in capital markets

In capital markets, the term ESG factor can refer to the qualitative or quantitative evaluation of the environmental, social, and governance attributes of a company, fund, security, or other investment. ESG factors can be a direct attribute of the investment, such as the pollution or negative impact the investment has on the environment, or they can be external, such as the risk posed by operating in a sector with particular exposure to changing weather patterns or regulations on governance. Most often, ESG factors are a mix of the two, and investors often focus on those that are internal to the investment's business.

ESG integration refers to incorporating E, S, and G risks and opportunities in the investment process, as well as in the project planning process, with the ultimately aim of improving investment decisions and reducing risks.¹

ESG standards/Sustainable infrastructure standards as tools for sustainability ratings

There is no one ESG standard but rather many different standards which are tools and frameworks used by project owners and companies to quantitatively evaluate the ESG performance of their project and company. Different ESG standards exist because of the diverse nature of projects and their different needs regarding screening and assessment. For example, ESG standards differ in their target user group, assessment methodology, geographical applicability, and assessment output. However, many different ESG standards on the market make it not only more challenging for project owners to decide on a tool, but also harder for investors to keep an overview and ultimately understand and rely on the different ESG standard data of an investment. This uncertainty may be one reason why ESG standards are still not widely deployed—in particularly in small and medium size businesses and projects. Therefore, chapter 4 and 5 provides the reader with an overview on different ESG standards and on what to look for when deciding on an ESG standard.



1

Introduction



1. Introduction

Infrastructure commonly refers to physical facilities that provide the building blocks of a functioning society, including but not limited to transportation networks and structures, buildings and cities, water and waste-related networks and facilities, energy networks and plants, and communications networks and facilities.² Infrastructure is at the nexus of economic growth, productive investment, job creation, poverty reduction, gender participation, climate change, and biodiversity. Infrastructure is essential to modern life, and in the public imagination it is hard to separate well-functioning infrastructure from modernity, economic development, and quality of life.

Infrastructure is durable, but paradoxically its durability and dependability mean that infrastructure creates risks for society and development when infrastructure fails. Media reports of natural and human-made disasters often focus heavily on damaged infrastructure as a measure of cost and magnitude, and such damages often come to encapsulate the memory of such events. In both ancient and modern times, the ruins of a sunken city, collapsed bridge, or beached ship have become symbols of past trauma and ongoing vulnerability to sudden change.

Climate change and other environmental risks pose new challenges for the world's infrastructure. Higher and more extreme temperatures, changing precipitation patterns, and more severe weather bring obvious risk of fire, water shortages, floods, and storms. Some regions, such as Australia, California, and the Caribbean islands, are having difficulties preparing for and confronting the next season's anticipated disaster while not yet fully recovered from the last.

Sustainable and resilient infrastructure, compared to conventional infrastructure, minimizes unintended social, environmental, economic risks and offers additional benefits. Resilient infrastructure combines three aspects: more effective preparedness and higher resistance against damages caused by natural or manmade disasters, lower human and animal suffering and material loss from such disasters, and faster recovery from damages.³

Sustainable and resilient infrastructure is closely connected to meeting the Sustainable Development Goals (SDGs)—in particular, goals related to access to basic public services and environmental sustainability. In many cases, sustainable infrastructure such as public transport, renewable energy, energy-efficient buildings, and electrification of transport and other infrastructure are critical to achieving climate and energy targets at the national and international level. Chapter 2 provides further detail and examples of how this can be so.

Infrastructure investments need to take environmental, social, and governance aspects into account to meet the SDGs and Paris climate targets, and increasingly they are doing so. This trend relates both to social and political imperatives as well as to the recognition that accounting for ESG factors can reduce financial risk and thereby enhance returns, as will be detailed in chapter 3. As a result of increasing investor interest, project developers can also benefit by adapting to this trend in investor interest. Furthermore, this reduction in financial risk and enhancement of returns can also serve to attract greater private investment to help close the increasing infrastructure financing gap.

International ESG standards exist and are becoming more reliable and helpful to developers, financiers and public agencies, as will be shown in chapter 4. Such standards are an outgrowth of national standards and regulation in the most highly developed countries, and of globalization of finance which has tended to pressure investors and financiers to converge in their understanding of ESG risks. Increasingly, the globalization of emerging market infrastructure finance, and the role of multilateral development banks in catalyzing sustainable infrastructure investment, has made such international ESG standards relevant for emerging market countries.

Although the uptake of sustainable and resilient infrastructure standards—referred in this work also as ESG standards—is increasing, much remains to be done. Divergent opinions or levels of risk awareness, combined with inadequate incentives for long-term risk mitigation in infrastructure development, can inhibit implementation of ESG standards in any environment, particularly in less developed contexts. Simultaneously, the growing interest in infrastructure sustainability standards also leads to a significant risk of greenwashing through the development of non-credible standards. This discussion is just beginning, and in this paper we raise further questions for research and dialogue.



2

Sustainable infrastructure investments are needed to achieve SDGs and Paris Agreement



2. Sustainable infrastructure investments are needed to achieve SDGs and Paris Agreement

In 2015, all 193 United Nations Member States adopted the UN Sustainable Development Goals (SDGs), which provide the blueprint for global development until 2030. The achievement of the Sustainable Development Goals will require a comprehensive large-scale economic transformation, including major changes in the energy system, industrial processes, heating, cooling, transport systems, urban infrastructure, land use and consumer behaviour.⁴

According to a review by the Global Infrastructure Basel Foundation, whilst all 17 SDGs are in some way dependent upon infrastructure, the five SDGs most directly related to sustainable infrastructure development are:⁵

- Goal 6: Ensure availability and sustainable management of water and sanitation for all,
- Goal 7: Ensure access to affordable resilient, sustainable, and modern energy for all,
- Goal 8: Promote sustained, inclusive and sustainable growth, full and productive employment and decent work for all,
- Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation and,
- Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable.

A review by scholars from Oxford University, the U.N. and the World Bank found that infrastructure directly or indirectly affects 72% of the SDGs—considering both positive and potential negative impacts of infrastructure.⁶ Sustainable infrastructure, in its capacity to support inclusive growth, enhance access to basic services and to promote environmental sustainability can even be considered the basis for the achievement of all 17 sustainable development goals.⁷

Overview of the Sustainable Development Goals



Source: The Brookings Institution, 2016

Future needs for sustainable infrastructure to achieve the SDGs are enormous, and they exceed the public and private funds that are available for their finance. This missing finance, known as the sustainable infrastructure financing gap, is currently estimated at US\$ 2-3 trillion annually.⁸ According to the World Bank, bridging this investment gap is crucial for the achievement of the 17 Sustainable Development Goals,⁹ especially in developing countries which constitute 70% of the unfulfilled demand for infrastructure.¹⁰

To meet the SDGs, investment will be needed in all aspects of infrastructure: water, energy, transport, communication, and other services. The sustainability of infrastructure design and investment will be critical to ensuring a clean environment both locally and globally. The services infrastructure provides directly help advance economic development and provide both direct employment as well as benefitting the disadvantaged and vulnerable by providing connections and services. The greater the resilience of infrastructure assets, including existing and new infrastructure, the less likely the public goods and services provided by infrastructure will be threatened by natural disaster.¹¹

The World Bank has estimated that US\$ 114 billion per year in new clean water infrastructure will be needed to meet the SDGs by 2030.¹² In the field of clean water, sustainable infrastructure includes municipal water infrastructure, pipe and sewage networks, storm water drainage, water purification and desalination, sludge treatment and natural infrastructure services provided by lakes, rivers, wetlands and shorelines. Many forms of water and sanitation infrastructure have implications for the transportation and power network. Pipes and storm water drainage are generally co-located with the road network. Reservoirs may be connected to hydroelectric facilities. Desalination and water treatment require high electricity consumption. Planning these forms of infrastructure necessitates integration across multiple government functions at the municipal and regional level.

The need for clean energy is similarly broad, including traditional centralized energy sources and newer distributed energy and energy storage in both rural and urban areas, as well as grid networks, supply chains for related equipment, energy efficiency improvements, and energy markets. While many traditional energy companies continue to invest in large coal or gas power plants or other fossil fuel infrastructure, these have greater financial and regulatory risks given the falling prices for renewable alternatives and the need to avoid carbon emissions. Investment in low-carbon and emissions free energy also has implications for water—hydro, nuclear, fossil energy, wind and solar all have varying impacts on water resources and air quality—as well as for employment patterns and transportation infrastructure. Access to energy is also critical to the SDGs, and this is an area where distributed wind and solar have a distinct advantage.¹³

Infrastructure is by its nature designed to last, but recent years have highlighted increasing threats to infrastructure and the need for policy makers and investors to focus on resilience. This includes the most obvious aspects of designing individual infrastructure assets for more extreme weather, rising sea levels, and the changing availability of water. Resilience also requires thinking not only in terms of the durability of a single asset, but also the need to ensure that the asset protects the broader communities it serves and is prepared for changing temperatures, including both preventing physical and health risks to the population as well as safe and efficient function of infrastructure. For example, buildings must be sufficiently efficient to prevent surging power demand during heatwaves.

Innovation can help, provided regulation incentivizes investors and infrastructure developers to prepare. Sponge city concepts, passive house technologies, passive solar technologies, shared transport options are recent examples where conceptual has pushed the industry towards more sustainable and resilient infrastructure investment patterns.



3 International financial institutions increasingly take ESG factors into account

3. International financial institutions increasingly take ESG factors into account

Infrastructure investments need to take environmental, social, and governance aspects into account to meet the SDGs and the goals of the Paris climate agreement. Although the term ESG has existed for several decades, historically investors in infrastructure were resistant to change, due in part to the high cost and difficulty of changing infrastructure investments in a more sustainable direction. Three factors have changed this: First, social and political imperatives are changing the perception of the cost of inadequate attention to ESG risks. Second, there is increased recognition that accounting for ESG factors can reduce financial risk and thereby enhance returns. Third, investors and project owners increasingly push for increasing attention to ESG factors, moving the topic of ESG from a niche market to a mainstream consideration.

As of 2020, the ESG trend has never been more visible

2020 has seen an acceleration in the trend of major investors shifting investment practices, particularly with respect to climate. In January 2020, an investor letter by BlackRock CEO Larry Fink shook up the financial world by stating for the first time that climate change was “fundamentally reshaping” finance, and that this was “compelling investors to reassess core assumptions about modern finance.” In response, BlackRock plans to “exit investments with high sustainability-related risks, such as thermal coal producers,” while making sustainability integral to portfolio construction and risk management.”¹⁴ The announcement was important not only because BlackRock is one of the world’s largest private asset managers with US\$ 1.8 trillion in assets, but also because it has one of the largest holdings of thermal coal.¹⁵

Just two weeks later, State Street Global Advisors, with US\$ 3.1 trillion under management, announced that it would vote against board members at first that lag on the company’s ESG scoring system.¹⁶ Saying that ESG standards were a “matter of value, not values,” State Street’s CEO further noted that, “Ultimately, we have a fiduciary responsibility to our clients to maximize the probability of attractive long-term returns... This is why we are so focused on financially material ESG issues.”¹⁷ Data on shareholder votes by InfluenceMap shows that between 2015 and 2019, State Street voted against 51% of climate-related shareholder motions.¹⁸

Surveys show ESG factors are growing more important to investors and asset owners

These major announcements, coming from historically conservative U.S. asset managers, represent only the most visible signals of a larger trend. Surveys by HSBC, the Callan Institute, and Morgan Stanley have observed a broader shift in investors’ and asset owners’ view on the importance of ESG for investing decisions.

The Callan Institute, which conducts an annual survey of investors regarding ESG adoption, found in 2018 that 72% of large investment funds are already incorporating ESG standards in their investment decisions. The percentage of study respondents incorporating ESG standards almost doubled between 2013 and 2019, from 22% in 2013 to 42% in 2019. The main reason for incorporating ESG factors was fiduciary responsibility, with stakeholder concerns and improved risk profiles also major considerations.¹⁹

Investment bank and retail brokerage Morgan Stanley has found rising interest in ESG among individual investors—and similar to institutional investors, individuals are motivated by returns rather than values. Morgan Stanley’s 2019 survey found that 85% of individual investors are interested in sustainable investing, up from 71% in 2015. This interest is starting to be matched among asset owners surveyed by Morgan Stanley: 84% were exploring or already using ESG standards in investment decisions. As with the Callan Institute, Morgan Stanley

found that reduced risk and enhanced returns were the top motivations for ESG among asset owners, above regulatory requirements, stakeholder concerns, or compliance with corporate mission or values.²⁰

Global consultancy McKinsey has also conducted surveys of C-suite executives on the value of ESG going back several years. The latest survey in 2019 shows that a consistent 57% of respondents see that ESG programs create shareholder value. Well over 95% of C-suite executives considered that environmental programs have long-term shareholder value, and over 90% saw similar value in social and governance-related programs. C-suite executives saw less short-term value in ESG programs, but here the trend showed a dramatic increase between 2009, when only a minority of executives perceived short-term value to environmental and social programs, while a clear majority saw short-term value in each in 2019. Significantly for infrastructure, executives professed a willingness to pay an average premium around 10% for companies with positive ESG records—and this was consistent even among those respondents who thought ESG programs had little effect on shareholder value.²¹

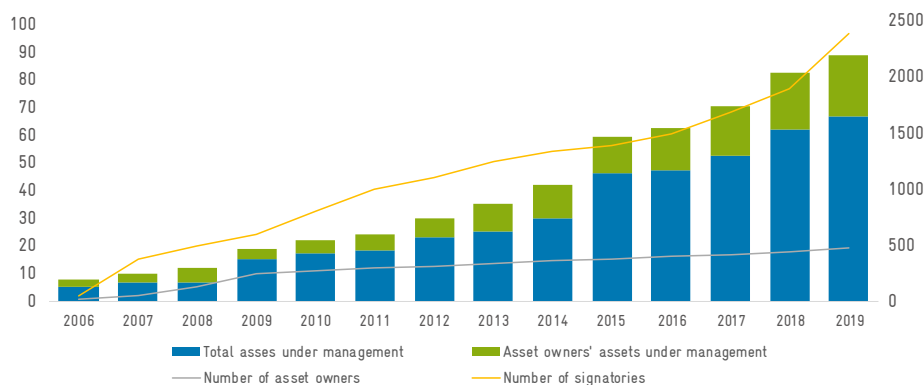
Broad global asset manager and investor surveys have produced similar results, while showing regional variations. HSBC's 2019 Sustainable Finance and Investor Survey showed that 94% of investors and 93% of financial issuers consider ESG important. In contrast to the Callan Institute and Morgan Stanley surveys, respondents to the HSBC survey reported that the main motivation for both issuers and investors was corporate values, followed closely by improved returns and reduced risk. 62% of global investors have ESG policies. In Asia, 86% of investors consider ESG issues somewhat or very important, and 49% have ESG policies in place, somewhat below the global average.²²

Similar trends can be seen among infrastructure investors. The results of a survey of 130 asset owners representing 10% of global assets under management published by EDHEC in 2019 show that most infrastructure investors are either somewhat aware or very aware of the ESG performance of their investments. Whereas only 17% of respondents considered ESG performance a “first order question” in 2016, 36% did so 2019.²³ A 2018 interview-based survey by WWF Switzerland and the Cadmus Group showed that infrastructure investors are increasingly interested in applying ESG standards to mitigate reputational risk, evaluate key risks in worker safety, corporate governance, and environmental risks. Infrastructure investors regard ESG monitoring as contributing to and supplementing more traditional due diligence procedures.²⁴

Explicit commitments to ESG integration are on the rise

Aside from investor surveys, there are other more tangible ways to mark progress in investor attitudes on ESG. The number of major companies that have signed the UN Principles for Responsible Investment (PRI) has grown rapidly over the past years, while the assets under their management added up to over US\$ 80 trillion by 2019.²⁵

UN PRI signatories 2006-2019 and assets under management



Source: UNPRI, 2020

As of early 2020, 50 financial institutions, including ABN AMRO, BNP Paribas, HSBC Holdings, and Société Générale, have committed to participating in a voluntary program to set emissions reductions targets known as the Science-Based Targets Initiative.²⁶ In September 2019, 130 global banks accounting for one-third of global banking sector assets, signed the UN Environment Finance Initiative Principles for Responsible Banking, which includes six aspects of ESG including aligning strategies with the Paris Climate Agreement.²⁷ In addition to these, a number of national and regional ESG initiatives exist.

ESG risks will increasingly affect credit ratings

All three big credit rating agencies—Fitch, Standard & Poor's, and Moody's—are now paying attention to ESG. Fitch Ratings launched its ESG ratings in January 2019, showing how each of the three ESG factors affects credit quality corporate credit reports, aiming to show such ratings in all credit reports by mid-2020. Moody's also aims to show ESG impacts on credit ratings in all reports, while S&P Global Ratings has developed a separate ESG Evaluation product. Since these ratings agencies use proprietary data from companies, their ratings may carry special weight with credit investors. Independent ratings firms such as MSCI also continue to publish influential ESG ratings as well.²⁸

In the developing world, multilateral development banks are increasingly adopting ESG

Multinational Development Banks (MDBs) are important finance providers for developing countries, especially for financing infrastructure. MDBs are helping countries realize their climate goals, and their nationally determined contributions (NDCs). In this capacity, MDBs' role in financing infrastructure is particularly decisive, due to the long-lasting impact of infrastructure and its potential to significantly influence a country's future carbon emissions and its overall development trajectory.

MDBs have a trifold impact through their direct investments, the mobilization of additional finance, and through the standards they employ. These standards are subsequently often adopted by other financial institutions, companies and governments via the projects they invest in and the policies they apply. In recent years, the trend of increased sensitivity to the environmental dimension of investment projects becomes more and more conspicuous: Since 2015, MDBs have adopted common reporting on their climate finance activities, and systematic screening of investments for climate risk is increasingly taking place within a standardized process of project appraisal across MDBs. Under the framework, MDBs²⁹ report that their collective climate adaptation financing reached a record high of US\$ 43.1 billion in 2018, up 22% from the prior year.³⁰

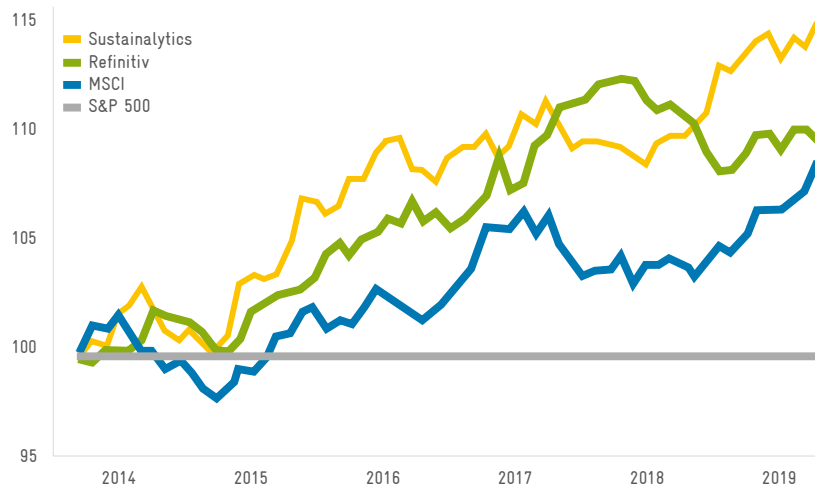
Moreover, MDBs have started including environmental performance in their economic project appraisals through **shadow carbon pricing** as a way of internalizing the negative externalities of GHG pollution.³¹ Aside from carbon pricing, **emissions standards**, are also used in some cases. In 2019, the European Investment Bank announced it would reduce its carbon emissions standard of 550 grams of CO₂-equivalent/kWh to 250 grams by 2021, effectively banning coal or natural-gas fired power.³² Such standards could also be applied more widely in other infrastructure sectors in the future.

Media started calling an ESG megatrend in 2019

ESG funds are not only attracting interest and attention from investors and asset managers, they are attracting funds as well, and their performance has accordingly improved. A number of major financial media or financial analysts—ranging from Morningstar, to CNBC, to Citibank—to label ESG as a new investment megatrend along with climate change.³³ According to Morningstar, European investors poured more than twice as much cash into sustainable funds in 2019 than in 2018 in response to fears about climate change, investing a record of €120 billion, versus €48.8 billion in 2018.³⁴ Assets held in the 2,405 European funds surveyed rose to €668 billion at

the end of 2019, a 56% increase in just one year, thanks to inflows, market moves and an increase in products. Similarly, EPFR Global data show that U.S. investors added US\$ 70 billion to ESG-related funds in 2019, and that total ESG funds reached over US\$ 500 billion, six times the holdings from year-end 2015.³⁵

Relative Performance of top-rated ESG companies for three ESG benchmarks versus average S&P companies, January 2014 = 100



Source: Bank of America Merrill Lynch, 2020, with data from MSCI ESG Research LLC, Sustainalytics, Refinitiv, and FactSet

Based on these fund flows, it is probably no surprise that ESG funds performed particularly well in 2019. Nine of the largest ESG mutual funds in the U.S. beat the benchmark equity index in 2019, according to Bloomberg data.³⁶ A study by Bank of America Merrill Lynch showed top-ranking ESG companies performed significantly better than the U.S. equity benchmark from 2015-2019 with a major increase in top ranked ESG stocks at the end of 2019 using the MSCI and Sustainalytics ESG indices. Outperformance was particularly pronounced for those with strong environmental sustainability ratings.³⁷ Some of the strong ESG fund performance in 2018-2019 has been attributable to a high weighting in technology, which also performed well.

As ESG companies have performed well, the converse has also been true: companies with poor ESG scores or records have underperformed in many cases. Of particular note is that discounts to such companies or assets can appear quite suddenly. According to a 2020 Goldman Sachs report, companies with good ESG ratings carry a premium of 20-25%, and coal company valuations have plunged partly due to ESG concerns that they had considered non-material just five years ago.³⁸ One institutional investor quoted by S&P Global Market Intelligence noted that mining company valuations have fallen significantly in just one year over ESG concerns. Oil company Exxon Mobil—the most valuable publicly traded company as recently as 2014—has lost 41% of its value even as the rest of the market has boomed.³⁹ Today, “ESG risk is one of the strongest headwinds against coal.”⁴⁰ ESG concerns have also affected insurance premiums and credit across the sector.⁴¹

KPMG notes that “markets are slow to price in sustainability risks due to their excessive focus on short-termism,” but that once risks emerge, the effect is often sudden. KPMG cites the example of the California electric utility Pacific Gas and Electric (PG&E), the largest utility in the U.S. that collapsed into bankruptcy in 2019 after its equipment contributed to a series of catastrophic wildfires connected with climate change.⁴²

Bloomberg analysis of ESG media mentions, 2015-2020



Source: Bloomberg, 2020

Strong performance and fund flows have in turn translated back into heightened media and investor awareness, feeding a virtuous cycle. Whereas ESG and sustainability had been fairly marginal topics in the financial media up until recently, the pace of reporting on the topic has increased notably. According to a Bloomberg analysis, ESG investing has seen a 10-fold increase in media mentions in the last few months of 2019 and the first few months of 2020.⁴³ Whereas financial media and investment analysts had taken a skeptical or neutral view of ESG in the past, this seems to have shifted towards more recognition that ESG benefits investors and that—in the words of CNBC—ESG is a trend that’s here to stay.

Studies bolster the view that ESG integration is good for investment returns

Since the inception of the Socially Responsible Investment (SRI) concept, which evolved into ESG metrics and funds, there has always been room for debate about the benefits of ESG for investors, and there is evidence on both sides. Research publications on the topic have grown increasingly frequent, in line with rising investor interest in ESG, and more recent research has tended to show greater correlation between good ESG ratings, financial performance, and asset values.

In perhaps the most comprehensive surveys of the literature, a meta-analysis of over 2,000 studies of ESG and performance published since 1970 showed that the majority of research—62% of meta-analyses—have shown a positive relationship between ESG ratings and corporate financial performance, and fewer than 10% have shown a negative relationship. North America and emerging markets were singled out as the regions with the most studies finding evidence of a positive relationship between ESG performance and financial performance.⁴⁴

ESG metrics and funds have changed over time, so it’s important to look at recent periods to get a clearer picture of how performance relates to ESG metrics based on today’s practices.

- A 2020 study by the Institutional Investor Services found that high ESG ratings are positively related to valuation and profitability and negatively correlated with volatility. Highly-rated ESG companies tend to outperform poorly-rated companies, and several valuation multiples (price/earnings, price/free-cash-flow, and price/book value) tend to be positively correlated with ESG performance. Furthermore, the higher returns tend to not be associated with higher risk, or limited to a few sectors. The authors do note that highly-rated ESG companies tend to be larger and more diversified.⁴⁵
- A 2019 Bank of America Merrill Lynch analysis found that the highest quintile ESG companies traded at a 20% premium to the lowest quintile from 2009-2019, that the highest decile of ESG-scorers in the U.S. had

an option adjusted spread (OAS, a measure of cost-of-capital) that was 200 basis points lower than the lowest decile ESG-scoring companies, and that in Europe the best-rated ESG companies enjoyed a 60 basis-point lower credit default swap spread.⁴⁶

- A 2017 analysis by the Boston Consulting Group found that companies with high ESG metrics had valuation multiples 3% to 19% higher, all else being equal, than those of the median performers in those ESG metrics. Similarly, the BCG study found that top ESG companies had margins that were up to 12.4 percentage points higher, all else being equal, than those of the median performers.⁴⁷
- A 2018 Axioma study of ESG residual returns covering all of the major global markets—the U.S., Japan, Europe, and emerging markets—found that from 2012-2018 portfolios made up of high-ESG-scoring companies generally outperformed or exhibited neutral performance compared to benchmarks, and there were few instances of underperformance.⁴⁸
- Research from fund manager Amundi suggests that responsible investing based on ESG principles was linked to outperformance of equity funds in Europe and North America from 2014 to 2017.⁴⁹
- A Bain & Co. study found that in the Asia-Pacific, private equity deals in sectors with social and environmental impact have been found to produce better results than deals in other sectors.⁵⁰

With regard to infrastructure, a 2019 study published by the EDHEC Infrastructure Institute found a neutral relationship between ESG assessment scores and financial performance of unlisted infrastructure assets.⁵¹ Superior financial performance of investment projects incorporating ESG components can take the shape of lower operational cost, higher residual value, higher resource-efficiency and management-efficiency, less disruption through shocks and stresses, superior worker productivity and indirectly through reputational benefits.⁵²

As noted previously, not all studies are so bullish on ESG. A study by FactorResearch explained the better financial performance of ESG stock in the U.S. by stating that less-levered and highly profitable firms are more likely to employ ESG standards, since they are more likely to have a more long-term orientation in their management approach and more available resources. The analysis found that ESG outperformed benchmarks by an average of 1% annually, and while part of this could be explained by ESG exposure to different common equity factors, ESG still outperformed a factor-neutral portfolio. However, ESG did not outperform when also adjusted for different sector exposure—reflecting, for example, higher ESG index exposure to the technology sector. ESG outperformance was also related to higher exposure to companies with relatively lower volatility.⁵³

As several research studies and surveys have shown, one problem with quantitative analysis of ESG and performance is that many ESG metrics, standards, and funds exist, ESG methodologies have changed over time, and over longer periods the changes in government regulations, policies, societal expectations, and disclosure practices make it difficult to evaluate the effect of ESG metrics. Nevertheless, the balance of evidence suggests that investors and asset managers pay attention to ESG disclosures and metrics, and that companies and investors who include ESG disclosures or metrics do no worse, and may substantially over-perform, those that do not. The long-term trend appears to be in favor of stricter and closer attention to ESG.

Social, political, and legal imperative

Recent and long-term performance and investing trends are likely to be bolstered by national policies and legislation in many markets. In recent years, regulators in several countries have confirmed that consideration of ESG factors is in line with fiduciary duty. In 2005, a leading U.K. law firm concluded that addressing ESG risks was consistent with fiduciary duty under English law. In 2014, the U.K. Law Commission reached the same opinion and in 2016, the Pension Regulator of the U.K. updated its guidance for trustees accordingly.⁵⁴ Canada and Sweden have also

taken steps to redefine fiduciary duty to include ESG risks, and Sweden will require its own national pension funds to become “exemplary” in the field of sustainable investment.⁵⁵

Disclosure requirements tend to increase with time, and recently governments have been requiring greater disclosures in the ESG field specifically. In the EU, the Institutions for Occupational Retirement Provision (IORP) II Directive requires pension schemes to consider ESG factors and disclose their approach.⁵⁶ In 2019 the European Parliament and EU member states agreed to new low-carbon investment benchmarks, as well as sustainability disclosure rules for a wide variety of investment products.⁵⁷ According to the draft of the newly revised EU Non-Financial Reporting Directive, more companies will have to publicly report their ESG performance and impact. The new rule will “ensure that investors, civil society and other interested parties have access to the information they need, while not imposing excessive reporting obligations on companies. It encourages companies to develop a responsible approach to business.”⁵⁸

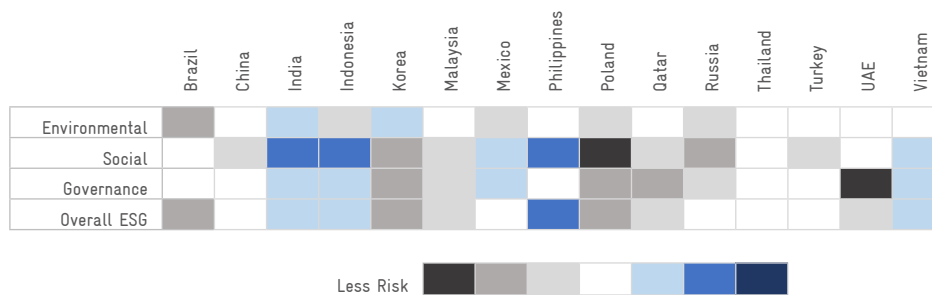
Although some countries haven’t imposed such requirements nationally, the introduction of stricter requirements in other countries, and also at the state level, will tend towards greater pressure for disclosure on all firms. For example, California in 2018 imposed increased climate-related disclosure requirements on the state’s two largest pension funds, which are among the largest in the world.⁵⁹ As such requirements become more common, shareholder and investor expectations are likely to rise accordingly.

The status of ESG integration in Emerging Markets

While there has been considerable progress in developed countries with regards to ESG standards, many emerging and frontier markets lag behind their peers in developed markets.⁶⁰ Emerging markets differ from developed markets in various respects. For example, many leading emerging market companies are family-owned, or state-owned, leading to lower public disclosure of activities or ESG performance.⁶¹ For those companies that do trade publicly, information disclosure may be lower, and institutional investors may play a less important role in pushing companies to boost disclosure overall, including on ESG metrics. This can then translate to the project level, where many project owners may perceive less investor interest in ESG. In the infrastructure sector, the strong role of the government in deciding which projects go forward, and the heavy involvement of the state in building, owning, or operating infrastructure assets, may reduce pressure for project owners or developers to employ ESG standards.⁶²

At the same time, the developing world is increasingly affected by ESG-related risks, as noted above in the discussion of the relationship between ESG and the Sustainable Development Goals. Scientific reports are increasingly showing how vulnerable nations like India, the Philippines and Vietnam are to climate change.⁶³ Poorer economies lack resources to combat sustainability-related risks.

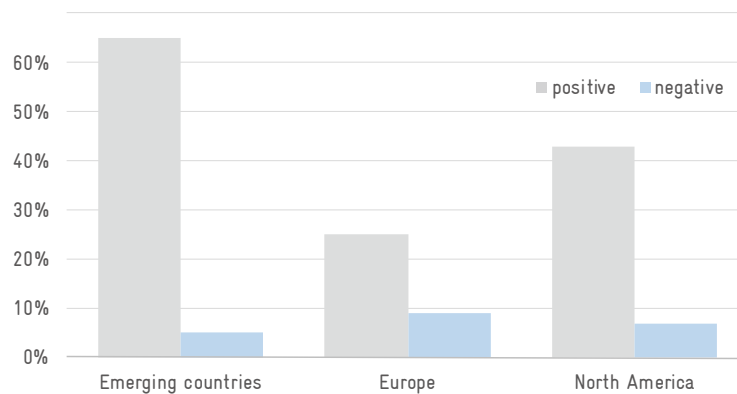
ESG risks of selected emerging economies



Source: GMO ESG assessment framework

Meanwhile, across Asia, there has been a broad awakening among asset managers and investors, and as a result, there has been resounding interest in emerging market funds focused on ESG integration. Just a decade ago, organizations involved in promoting ESG standards were reporting that it was difficult to have emerging market companies interested in having a constructive and informed conversation about water pollution, whereas now there is an entirely different understanding that robust ESG management is a sound business strategy that can create long-term value.⁶⁴ Especially in emerging countries there is a positive correlation between taking ESG factors into account and economic returns.⁶⁵

Relationship between consideration of ESG factors and economic success



Source: Friede, Busch, Bassen (DWS Group); 2015⁶⁶

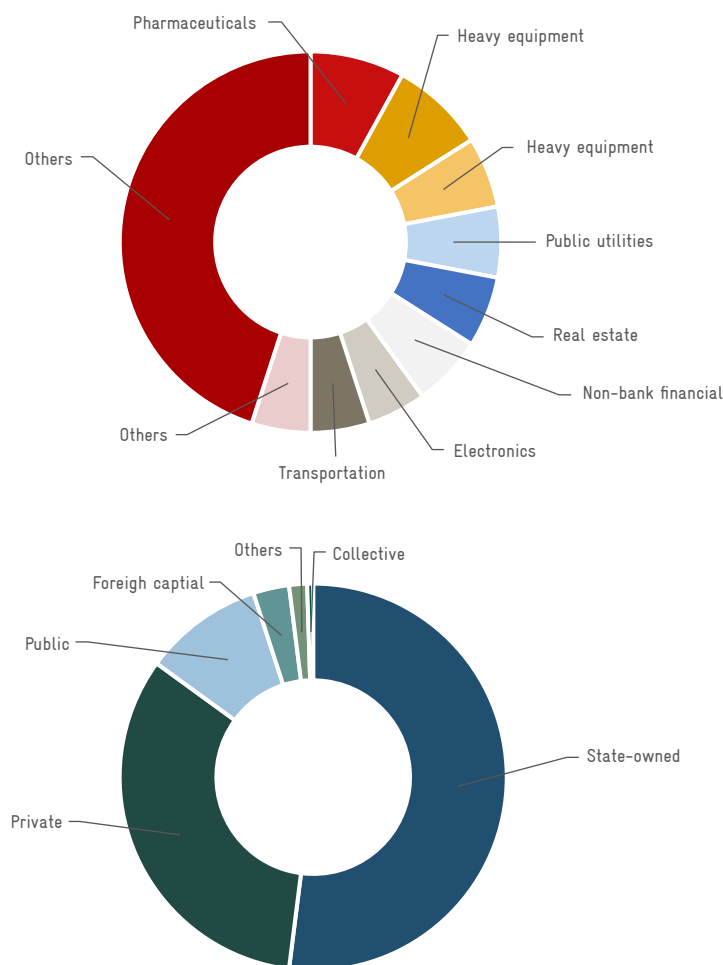
A recent study by Candriam, an asset management firm about the impact of ESG investment in emerging countries showed that companies from emerging countries that perform best regarding ESG criteria outperformed companies in the MSCI Emerging Markets Index by an average of 2.4% over a period of ten years. The volatility of the ESG portfolio and the traditional portfolio was roughly the same, implying improved risk/reward. Among all analysed regions (Asia, Latin America, Middle East and Africa), the returns were particularly pronounced in Asia, where two thirds of the MSCI EM index components are located.⁶⁷ However, it is worth noting that ESG assets in Asia are growing at a rate of more than 30% each year, which indicate that the ESG concept is increasingly valued and accepted by the market.⁶⁸

China has been a late mover in ESG, but in recent years the Chinese government has begun to explicitly promote sustainability and green finance, including the adoption of its own national standards and requirements in these fields. There are already several major ESG rating agencies in China, such as SynTao Green Finance, Social Value Investment Alliance, International Institute of Green Finance of Central University of Finance and Economics and Hexun CSR Evaluation System. According to one Chinese assessment, China's ESG ratings are at an early stage of development, focusing more on sustainability from the perspective of resource supply—such as whether a company's or country's raw resource inputs will be exhausted, rather than whether these inputs cause environmental pollution.⁶⁹ Reflecting greater attention to green finance, Chinese researchers have produced numerous studies on ESG development. The Central University of Finance and Economics has set up an ESG database of the largest listed companies in China and initiated the corresponding ESG assessment methodology with 25 primary indicators and 217 secondary indicators. There are also specific indicators for different industries.⁷⁰

China still faces challenges in its development of ESG standards in capital markets. Regulatory authorities have yet to issue a mandatory ESG disclosure policy, and current corporate ESG disclosure is widely seen as insufficient. Institutional investors and asset managers still lack the ability to identify environmental and social risks, and may not have fully understand the long-term advantages of ESG investment yet. Listed companies and issuers generally have insufficient awareness of ESG, and also perceive insufficient incentive to proactively disclose ESG information. Considering this situation, it is perhaps unsurprising that there are relatively few ESG-related financial products in

the Chinese market.⁷¹ Information disclosure is a major issue for ESG integration in many developing and emerging countries, including China. According to an analysis from 2018, out of 3,797 A-share listed companies in China, roughly 25% have independent corporate social responsibility reports or ESG reports. Another key finding was that the ESG disclosures of state-owned enterprises were higher than that of private enterprises, and that top-ranked industries in terms of disclosure included/were pharmaceuticals, chemicals, heavy equipment manufacturing, and public utilities. However, the analysis also found that corporate ESG reporting was largely composed of favourable publicity and contained little disclosure of negative indicators.⁷²

Social responsibility disclosures of A-Share listed companies in 2018



Source: Institute of Public Companies in the Financial Sector, 2019

India's share in global investing accounts for a relatively modest proportion—a 7–8% benchmark for emerging markets and about 1% for global pools. However, India's share of investments in global ESG funds is higher with 95 global socially responsible funds investing in India, allocated on an average 18.5% to Indian companies accounting for US\$ 25 billion. Another indicator showing India's rising interest in ESG integration is the increase of India's ESG disclosures. The social disclosure levels have more than doubled from 2010 to 2017, and India even outscores the U.S. on social disclosures. The country's Environmental disclosure score too has improved over the years and is set to improve further amid rising awareness.⁷³ According to a study by McKinsey in 2017, impact investing in India has the potential to grow six to eight times by 2025. The drivers for that are large unmet social needs, strong forecast growth of the Indian social sectors and robust market forces.⁷⁴ Other factors that contribute to and improve the growth of ESG investments in India include: the commitment to achieve the SDGs, the action by global peers and increased recognition of implications of E&S risks, and the increase interest from domestic investors. For example,

the Indian market has recently witnessed announcements and launches of ESG funds, and that several Indian asset management companies have signed the UN Principles for Responsible Investment.⁷⁵ A report by IFC about Climate Investment Opportunities in South Asia has even estimated an investment opportunity of US\$ 3.1 trillion in India.⁷⁶

One prominent example for the importance of incorporating ESG risks, as well as of how ESG challenges can influence public policy decisions and motivate responses is the decision to relocate Indonesia's capital city Jakarta to Borneo. The relocation is a big infrastructure project that needs to integrate ESG risks in order to address current and looming environmental and social risks, namely subsidence, pollution, and congestion. In part due to these ESG risks, Indonesia has positioned infrastructure development as one of Indonesia's highest national priorities. With a focus on inclusive and sustainable growth, it aims to deliver US\$ 400 billion worth of new projects in the transportation, energy, water and waste sectors between 2015 and 2019.⁷⁷ The government's budget will cover only 63% of these costs, with development partners and the capital markets expected to provide the remaining 37%. To fill this investment gap, the government is actively seeking an estimated US\$ 150 billion in investments.⁷⁸ The government's Roadmap for Sustainable Finance in Indonesia 2015-2019 provides guidance on green finance, including the use of green bonds.⁷⁹

The ambition of emerging economies such as China, India, and Indonesia to meet their development goals, the vulnerability of emerging economies to ESG risks, and their need for infrastructure capital, makes it critical that the countries, as well as infrastructure investors and project owners, integrate ESG into the planning and investment processes. Given the need for international capital, and in some cases the lack of adequate local standards for sustainable infrastructure standards, internationally-recognized ESG standards may be critical to helping these countries reach their infrastructure-related development goals.

Overall, promotion of ESG in Asia will depend on three aspects. First, it will require greater efforts by investors and non-governmental organizations to advocate for the benefits and importance of corporate integration of ESG factors, as well as promotion of ESG principles among policy makers and the media. Second, it will require efforts on the part of NGOs to raise awareness of ESG principles and concepts among companies and investors. Third, it will require greater efforts to document the benefits of integrating ESG into project planning and investment, as well as demonstrating the risks of failing to do so. This will ultimately help investors see the importance of avoiding companies and projects that take insufficient account of ESG factors, while encouraging the market to pursue greater integration of ESG concepts throughout the project and investment cycle.⁸⁰

The potential of ESG integration in Asia is immense, given that the region's policy makers and society are paying more attention to environmental and social issues overall. Therefore, with time, it seems likely that investors will come to prefer companies with high ESG performance. But for capital to really flow into companies that with well performance on ESG, this will require further development of ESG ratings systems and evaluation.⁸¹

Conclusion: Multiple factors are coming together in favour of ESG integration in capital markets

As this chapter illustrates, the last decade has seen the confluence of several major trends that all point to increased attention and benefit to those companies, investors, and asset owners that include ESG disclosures and metrics. CEOs of major investment firms, fund and portfolio managers, and individual investors are all increasing their focus on ESG-related issues, and increasingly demanding not only disclosure but performance. Not only is this resulting in greater fund flows into ESG funds and assets, but certain poor-ESG sectors are experiencing valuations collapse. Even if that proves temporary, longer-term studies show that good ESG performance correlates with good financial performance and asset valuations. Furthermore, increasingly stringent regulatory requirements and industry practices will tend to favour early movers.



4

ESG standards exist and are starting to be deployed

4. ESG standards exist and are starting to be deployed

Investors, asset managers, and policy-makers are increasingly seeking greater disclosure of ESG factors as well as pushing companies to improve performance on ESG metrics, as the preceding chapter has shown. However, this is complicated by the absence of uniform ESG standards. This leaves open the window for selective disclosures and corporate greenwashing—sometimes not from intent to deceive but rather due to the absence of clear standards.

In many industries standards do exist, and the challenge is finding a suitable standard to employ. Infrastructure includes a wide variety of asset types and classes: buildings, roads and other transport infrastructure, water networks and treatment, energy production and transmission/transportation, and communications. In each country, there typically exist sector-specific regulations that provide a minimum performance standard, and most industries will also have technology-specific standards that customers or users demand as an indicator of quality.

In recent years, several organizations have begun to introduce international standards for infrastructure projects. Here we briefly survey the characteristics of such standards, drawing on a comprehensive review from researchers at Stanford University, WWF, and Guggenheim Partners.⁸² The authors note that existing standards differ in several important respects: some are focused on evaluation or certification of individual projects, while others focus on the overall portfolio. Some are project screening tools, whereas others are accounting tools. Some are open-sourced, while others are proprietary. Those listed here are applicable across broad areas of infrastructure, but in addition some sector specific standards also exist.

Existing International ESG standards for infrastructure

ESG Tools and Standards	Developer	Year developed	Type
SuRe® (Standard for Sustainable and Resilient Infrastructure)	Global Infrastructure Basel Foundation (GIB)	2015	Standard with third-party certification
ENVISION®	Institute for Sustainable Infrastructure (ISI)	2015	Standard with third-party certification
CEEQUAL (Civil Engineering Environmental Quality Assessment)	BRE Group (Building Research Establishment)	2002	Standard with third-party certification
IFC Performance Standards, Equator Principles	International Finance Corporation (IFC)	2006	Set of standards with guideline character
GRESB Infrastructure Assessment	Green Business Certification Inc. (GBCI)	2016	Global Sustainability Benchmark with third-party verification
SASB (Sustainability Accounting Standards Board Infrastructure Team)	Sustainability Accounting Standards Board (SASB)	2012	Sustainability Accounting Standard
TCFD (Task Force on Climate-Related Financial Disclosures)	Financial Stability Board	2015	Sustainability Accounting Standard
IS Rating, IS Operation, and IS International Scheme	Infrastructure Sustainability Council of Australia (ISCA)	2012	Standard with third-party certification
GHG Protocol Accounting and Reporting Standard	GHG Protocol	2004	Sustainability Accounting and Reporting Standard
CDC ESG Toolkit for Fund managers	CDC Group (Commonwealth Development Corporation)	2007	Toolkit for practical guidance on assessing and managing ESG factors
UN PRI (Principles for Responsible Investment)	United Nations partners	2006	Investment Principles; Portfolio Assessment and Benchmark Tool
UN SDGs	United Nations members states	2015	Global Development Framework

The choice of tool will depend on the differing level of priorities attached by investors and project owners to different characteristics. The SuRe[®] standard, for example, features a high degree of objectivity, given that certification takes place through an independent, third-party verification process, and a high degree of information transparency, since SuRe[®] has 61 criteria across 14 themes, each of which would require documentation and verification. This process necessarily entails greater time and cost, but can also give investors greater confidence that the evidence provided and verified under the standard merit their attention, and that standards can thereby facilitate due diligence and investment documentation. Documentation of more criteria can also help projects comply with other standards—such as those unique to a particular investor—without engaging in new processes or verification.

Conversely, investors or projects may from the outset opt for simpler standards such as those of the IFC Performance Standards and Equator Principles, which include only eight categories and require only self-reporting. By doing so, costs of applying the standard are reduced, and a project can still claim the reputational benefits of having applied a recognized standard. This standard may be particularly relevant for projects seeking MDB financing, for example.

Aside from time and cost, another consideration is the time frame for applying a standard. Some standards, such as LEED (Leadership in Energy and Environmental Design), focus more on the design and construction phases, and are certified based on the design and construction. Other standards such as GRESB (Global Real Estate Sustainability Benchmark) and SuRe[®] (Standard for Sustainable and Resilient Infrastructure) may require ongoing certification to ensure an infrastructure asset is still complying with original designs and performance characteristics—which in turn entails ongoing costs. Past surveys have suggested that many infrastructure investors place most emphasis on ESG in the decision on whether to invest, as opposed to integrating ESG into the financial model or ongoing evaluation of performance.⁸³ In the future, as more data on ESG performance comes available, project owners and investors may become increasingly demanding with respect to ongoing ESG operational performance of assets. For now, investors and project owners may employ standards mainly at the design and investment stages, whereas ongoing performance of assets within existing portfolios may have less demand for applying or maintaining standards and requirements.

A paramount consideration for investors and project owners, when adopting standards, is the reputation of the standard itself. For now, most international standards remain at an early stage of adoption, and are perceived by project owners as positive ways to position a project's reputation and resolve documentary requirements for more demanding investors—but not necessarily as absolute requirements. As discussed in the foregoing chapters, companies and funds are increasingly seeing value in ESG standards, and many studies have found a performance advantage for applying ESG standards. That said, there is little specific project-level evidence on this matter to date—reflecting the wide variety of infrastructure assets that exist, and the fact that individual infrastructure assets are both long-lasting and illiquid. As has happened with equities, this is likely to change with time, and will likely hit certain sectors first, such as those with relatively greater environmental sensitivity such as fossil fuel-related projects, hydroelectric dams, or transportation infrastructure in sensitive ecosystems. If investors grow to expect greater ESG standards and documentation over time, this should benefit those with early experience, as well as projects that have applied more stringent standards from an early stage.

Several of the schemes above (namely SuRe[®], IS, ENVISION[®], CEEQUAL, and GRESB) have recently partnered on an initiative funded by the World Bank and the EBRD aiming to derive a set of aligned indicators for sustainable infrastructure. Limited information is currently available; however, the initiative marks a step towards greater cooperation of the tools and standards.

The following profiles give a more detailed overview on different ESG standards, as well as a specific example for a project or a company that has applied the standard and undergone the verification and certification process.

SuRe® (Standard for Sustainable and Resilient Infrastructure)

Developer: Global Infrastructure Basel Foundation (GIB)



Launched: 2015; Latest version: v.1.1 (2018)

Type: Third-Party certification standard; Assessment tool applicable for project rating and screening

Description: The standard is applied initially as a self-assessment, then a third-party certification assessment based on ISO17021, including a public consultation phase, yearly desktop surveillance activities and 5-yearly re-certification audit

Users: Project Team, Developers, Investors, Public Authorities, General Audience, Credit Rating Agencies, Financial Institutions

Phase: Throughout whole project-lifecycle including Planning, Design, Construction, Commissioning, Operation, Upgrade and Decommissioning

Geographical Applicability: Global (Countries of assessed projects: 14)

Number of projects assessed: 4 third-party assessments, 32 self assessments

CAPEX of assessed projects: >20.5 bn USD

ESG Criteria

■ Environment (E) ■ Social (S) ■ Governance (G)



3 categories (E,S,G), 14 themes/sub-categories, 61 criteria

Example: Certification of the EKA Arena by TransStadia in Ahmedabad, India in 2020

- Multi-purpose arena, built under public-private partnership (PPP) with the Government of Gujarat
- ESG integration included water conservation by rain harvesting and water reuse, an energy efficient, secure and resilient building design, waste management and avoidance strategy, sustainable financing, provision of facilities for the physically challenged, and a stakeholder consultation process
- Contributed to the tourism and sports sector, to increase economic growth, to improve the city's reputation as an international hub, to enhance sustainable and inclusive urban infrastructure by engaging with the community, offering a public space for regular physical, social and cultural activity



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ENVISION®

Developer: Institute for Sustainable Infrastructure (ISI)



Launched: 2015; Latest version: v.3 (2018)

Type: Third-Party certification standard; Assessment tool applicable for project rating and screening

Description: Can be applied for self-assessment, but can also undergo an independent 3rd party verification and certification process. Only verified projects by the ISI are eligible for awards¹

Users: Project Team, Developers, Financial Institutions, Public Authorities, General Audience

Phase: Planning, Design, Construction, Operation

Geographical Applicability: Primarily US and Canada; Global (Countries of assessed projects: 6)

Number of projects assessed: >61 third-party assessments

CAPEX of assessed projects: >48 bn USD

ESG Criteria

■ Environment (E) ■ Social (S) ■ Governance (G)



5 categories, 14 sub-categories, 64 criteria

Project Example: Alliant Energy - Wind Park in Iowa receives the Envision® Platinum award (2019)¹

Key factors

- **Leadership commitment:**
Focus on increasing the company's energy generation capacity for renewables
- **Win-Win for Farmers and Surrounding Communities:**
Land lease payments contribute to local economic growth, construction of additional roads
- **High-performance, Durability and Reduced Noise:**
Selected turbines withstand higher wind speeds, and have a higher capacity factor, as compared to other models



¹ "Upland Prairie and English Farms Wind Farms," ENVISION, June 2019, at <https://sustainableinfrastructure.org/project-awards/upland-prairie-english-farms/>.

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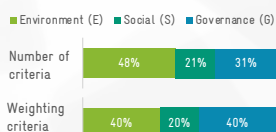
IS Rating, Operation, and IS International Scheme



Developer: Infrastructure Sustainability Council of Australia (ISCA)

Launched: 2012; Latest version ISv2.0 (2018)
Type: Third-Party certification standard; Assessment tool applicable for project rating and screening
Description: The scheme is applied to assess the project with the help of a case manager from ISCA, followed by a third-party verification and the final certification and awarding process based on the overall score
Geographical Applicability: Primarily Australia and New Zealand; Since 2017 globally applicable
Users: Project Team, Developers, Public Authorities, Investors, General Audience
Phase: Planning, Design, Construction, Operation
Participants: >63 third-party assessments
CAPEX of assessed projects: >160 bn USD

ESG Criteria



4 categories, 17 sub-categories, 42 criteria

Example: Level Crossings Removal Project in Australia - awarded as a leading project in 2018¹
 Construction of a new station and the removal of two dangerous and congested level crossings to create better cycling and pedestrian facilities

- The project explored several sustainability innovations in the design phase which had a significant positive impact:
- Use of a dewatering centrifuge unit for the first time in the rail sector which helped reduce water usage and brought monetary savings for the project
 - Digital engineering was used for the first time in Australia to engage with the community
 - Use of recycled and sustainable materials



¹ "Bayswater Level Crossing Removal Project," Level Crossing Removal Authority, July 2018, at https://levelcrossings.vic.gov.au/...data/assets/pdf_file/0013/221152/LXRA0838-Bayswater-Sustainability-Report_03.pdf.

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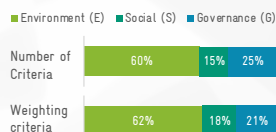
CEEQUAL (Civil Engineering Environmental Quality Assessment)



Developer: BRE Group

Launched: 2002; Latest version: v.6 (2019)
Type: Third-Party certification standard; Assessment tool applicable for project rating and screening
Description: Self-assessment process, carried out by a trained CEEQUAL Assessor using the CEEQUAL manual. The completed assessment is then externally verified by a CEEQUAL-appointed Verifier based on the evidence presented for each question, resulting in a score and rating
Geographical Applicability: Mostly UK & Ireland; Global
Users: Project Team, Developers, Public Authorities, General Audience, Investors
Phase: Planning, Design, Construction, Operation, Maintenance
Number of projects assessed: <300

ESG Criteria



11 categories, 30 criteria

Project Example: Doha South Sewage Infrastructure Project – Main Trunk Sewer certified in 2019¹

- First project to achieve CEEQUAL certification in the Middle East
- Selection of key factors
- Water environment: Measures to protect groundwater from any potential contamination
 - Efficient use and management of water, materials and energy: Carbon Footprint Management plan was produced that included strategies to reduce overall energy consumption such as the selection and maintenance of efficient generators, use of solar panels to operate all cameras on site, and the use of LED lighting in tunnel; collected and reused rainwater onsite



¹ "Doha South Sewage Infrastructure Project," CEEQUAL, June 2019, at <https://www.ceequal.com/case-studies/doha-south-sewage-infrastructure-project-main-trunk-sewer/>.

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GRESB Infrastructure Assessment

Developer: Green Business Certification Inc. (GBCI)



Launched: 2016

Type: Global Sustainability Benchmark with third-party verification

Description: The tool consists of a Fund and Asset Assessment; focuses on operating investments, infrastructure assets, companies and funds; 3rd party verification by GBCI, conducted annually

Users: Investors, Operators, Financial Institutions, Insurers, Developers

Phase: Operation, Maintenance, Procurement, Finance, Prioritization

Geographical Applicability: Global (Countries of assessed projects: >20 countries)

Participants: over 100 funds and about 400 assets

Gross asset value in 2019: 471 bn USD

ESG Criteria

Asset Assessment(70%): 7 categories

Environment (E) Social (S) Governance (G)

Number of Criteria 26% 12% 62%

Weighting criteria 30% 15% 55%

Fund Assessment(30%): 13 categories

Optional: Resilience Module

Example: Scoring of Transurban Limited - Australian Infrastructure company¹
Extract from the comprehensive benchmark report 2019



¹ "GRESB Benchmark Report 2019," GRESB, Sept 2019, at https://gresb-prd-public-s3.amazonaws.com/2019/Documents/2019_Transurban_Public_Benchmark_Report.pdf.

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UN PRI (Principles for Responsible Investment)

Developer: United Nations



Launched: 2006

Type: Investment Principles; Portfolio Assessment and Benchmark Tool

Description: Responsible Investment (RI) is an approach to investing that aims to incorporate ESG factors into investment decisions; PRI signatories must annually report on their activities and progress towards implementing the Principles via the reporting framework, answers are assessed and results compiled into an assessment report

Geographical Applicability: Global

Users: Investors

Phase: Finance

ESG Criteria

Environment (E) Social (S) Governance (G)

14 Modules 11 7 82%

Example: Robeco¹ (International Asset Manager)

In 2017 the company received the highest rating ('A+')² for a few modules including their Strategy & Governance module, ESG integration and active ownership



¹ "High scores for Robeco in 2017 UN PRI assessment," Robeco, 2017, at <https://www.robeco.com/en/insights/2017/09/high-scores-for-robeco-in-2017-un-pri-assessment.html>.

² Scoring: 'A+'(95%), 'A'(76-94%), 'B'(51-75%), 'C'(26-50%), 'D'(1-25%), 'E'(0%)

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SASB (Sustainability Accounting Standards Board)

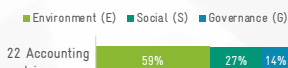


Developer: Sustainability Accounting Standards Board (SASB)

Launched: 2012; Latest version 2018
Type: Sustainability Accounting Standard, No quantitative scoring
Description: Based on the Sustainable Industry Classification System[®] (SICS[®]) which categorizes industries according to their resource intensity and sustainability innovation potential; Online assessment tool
Geographical Applicability: Currently U.S. focused
Users: Operator, Developer, Public Authorities, General Audience, Investors
Phase: Operation, Prioritization

ESG Criteria

Example: Electric Utilities & Power Generators industry



22 Accounting metrics
 11 SICS groups, 77 industries; Criteria (so called "Accounting metrics") depend on the company's industry category

Example: NRG Energy Inc. – SASB report 2017¹

- Categorized under the Infrastructure sector – Electric Utilities & Power Generators industry
- Report includes about 19 accounting metrics grouped into 9 categories: GHG, AQ, water, waste, coal ash, workforce health & safety, nuclear safety, legal & regulatory environment

Accounting Metric	Accounting Standard	2017
GHG Emissions		
GHG emissions (Scope 1)	GHG emissions (Scope 1) (tCO ₂ e)	22,300
GHG emissions (Scope 2)	GHG emissions (Scope 2) (tCO ₂ e)	11,100
GHG emissions (Scope 1 & 2)	GHG emissions (Scope 1 & 2) (tCO ₂ e)	33,400
GHG emissions (Scope 3)	GHG emissions (Scope 3) (tCO ₂ e)	1,100
GHG emissions (Scope 1, 2, & 3)	GHG emissions (Scope 1, 2, & 3) (tCO ₂ e)	35,600
Water		
Water consumption	Water consumption (m ³)	1,100,000
Water consumption (Scope 1)	Water consumption (Scope 1) (m ³)	1,100,000
Water consumption (Scope 2)	Water consumption (Scope 2) (m ³)	0
Water consumption (Scope 1 & 2)	Water consumption (Scope 1 & 2) (m ³)	1,100,000
Water consumption (Scope 3)	Water consumption (Scope 3) (m ³)	0
Water consumption (Scope 1, 2, & 3)	Water consumption (Scope 1, 2, & 3) (m ³)	1,100,000
Waste		
Waste generated	Waste generated (t)	1,100
Waste generated (Scope 1)	Waste generated (Scope 1) (t)	1,100
Waste generated (Scope 2)	Waste generated (Scope 2) (t)	0
Waste generated (Scope 1 & 2)	Waste generated (Scope 1 & 2) (t)	1,100
Waste generated (Scope 3)	Waste generated (Scope 3) (t)	0
Waste generated (Scope 1, 2, & 3)	Waste generated (Scope 1, 2, & 3) (t)	1,100

¹ "Sustainability report," NRG energy, 2017, at <https://www.nrg.com/assets/documents/sustainability/2017-nrg-sustainability-report.pdf>, pp. 92-95.

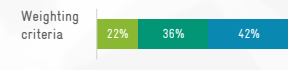
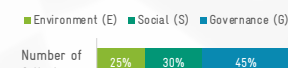
IFC Performance Standards, Equator Principles



Developer: International Finance Corporation (IFC)

Launched: 2006; Latest version: 2012
Type: Set of standards with guideline character; No quantitative scoring
Description: Standards provide guidance on how to identify risks and are designed to help avoid, mitigate, and manage them; Clients of the IFC need to bring the projects in line with the standards; Equator Principles (10 principles): agreement between over 90 financial institutions in 37 countries to apply the IFC performance standards
Geographical Applicability: Global
Users: Project Team, Developers, Financial Institutions, Investors, Local Authorities, General Audience
Phase: Finance, Prioritization, Design, Construction

ESG Criteria



8 Performance Standard with about 32 criteria²

Project Example: PERU Liquefied Natural Gas (PLNG) plant¹

Selection of key factors:

- Strong commitment to ESG Management; site-specific analysis
- Engaged effectively with affected communities to create an ESMS that is tailored to the regional and sectoral context
- Designed risk mitigation solutions that were effective and innovative, including a unique driver safety program; a transparent, inclusive, and culturally appropriate plan for hiring local workers; and use of carefully tailored methodologies for conducting survey of the terrain and monitoring biodiversity mitigation efforts



¹ "PERU LNG: A Focus on Continuous Improvement," IFC, 2013, at https://www.ifc.org/wps/wcm/connect/db4efbd9-647c-4882-bced-3acdc62177e6/IFC_PLNG.pdf?MOD=AJPERES&CID=jUYC71K.
² Determined from IFC "requirement" section in each of the 8 Performance Standards

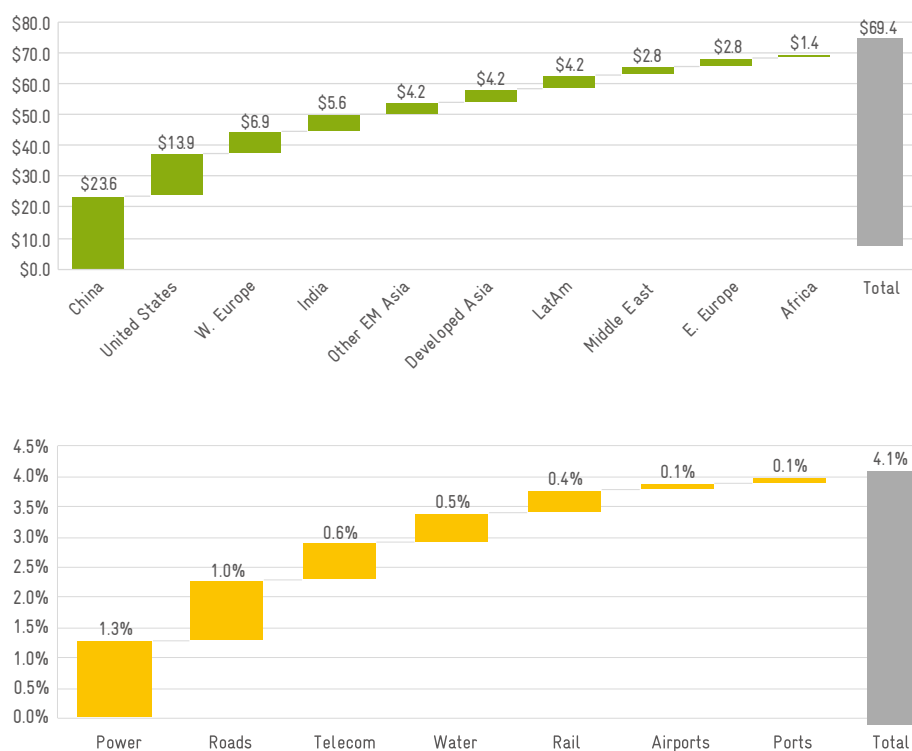


5 International ESG standards are relevant to emerging market contexts

5. International ESG standards are relevant to emerging market contexts

Any look at the importance of ESG standards must consider the areas that will experience the greatest investment in this field in the coming decade. Although sustainable and resilient infrastructure is important for countries regardless of their development status, the greatest demand for new infrastructure investment in the coming decades will come from developing economies, particularly in Asia. According to the 2018 New Climate Economy Report, globally the world will need US\$ 90 trillion in infrastructure investments through 2030, 70% of which will be in developing countries.⁸⁴

Infrastructure spending 2017-2035 by region (green) and by sector as % of GDP (yellow)



Source: McKinsey & Co, Guggenheim Partners, 2018

Of infrastructure spending in the developing world, Asia accounts for the largest proportion, especially China, but also India (US\$ 5.6 trillion) and other developing Asian countries (US\$ 4.2 trillion). Growth in infrastructure spending globally is currently taking place mainly in developing economies.⁸⁵ The largest proportion of infrastructure investment is expected in the power, road, telecom, and water sectors.

Large infrastructure projects in the developing world are dominated by the state sector, but often require financing from multiple sources, including global capital markets and MDB financing. Increasingly, MDB financing aims to attract—or crowd in—private financing by identifying sectors and projects suitable for investment that can then attract additional private capital—enabling MDB funding to go further and ultimately helping achieve global development objectives. As noted in the previous chapter, the World Bank and others have developed sustainable ESG standards, such as the Equator Principles.

In the initial phase of international infrastructure standards, large projects have the greatest scope for implementing standards due to their longer time horizons, greater capital needs, and larger resources for documentation and compliance. However, smaller projects may ultimately benefit more from applying standards due to reputational gains and increased investor awareness. Smaller projects may have fewer avenues for attracting international investor attention, given their smaller ticket size and hence limited number of potential investors. Ultimately, in the early phase of adoption for international ESG standards, there may exist a happy medium of project size—sufficiently large to afford the time and resources standards require, but small enough to benefit.

Although the existence of multiple different ESG standards poses a challenge for project owners, it also provides a potential benefit in that some standards may be more suited to different types of projects—for example, to infrastructure projects in the developing world. One analysis of three different ESG ratings frameworks (Envision, CEEQUAL, and Infrastructure Sustainability ratings) found that these standards were mainly oriented towards developed countries and needed further elaboration to increase their applicability in poorer countries.⁸⁶ This and other studies have pointed out the need to enhance ESG standards for the developing world to place greater emphasis on social risks, as many ESG standards place greatest emphasis on environmental sustainability.⁸⁷ At the early stage of ESG standards, greater choice among standards can enable investors and project owners to opt for standards with the most value for the situation at hand in the developing world—though in the long run a fragmented market for such standards has obvious drawbacks as well.



6

Conclusions and topics for further research



6. Conclusions and topics for further research

In this review of the ESG literature, we have seen that on the one hand the popularity of ESG has continued to increase over the last few years among a wide variety of investors globally. The data suggest that not only is there no penalty to employing ESG standards or investing in ESG-based funds, but there is some indication—albeit with caveats—that doing so may improve risk-adjusted returns. Many studies of risks and returns focus on equities, and on advanced economies, and there is less information about other asset classes such as infrastructure investments, or on ESG in the developing world in general.

Although the data may be more sparse, there is some reason to expect that ESG standards, metrics, and other considerations might be still more important for long-lasting infrastructure investments in the developing world. Whereas advanced economies may have extensive existing regulation and enforcement around factors that are also included in ESG standards, developing countries may have shortcomings in this regard. With time, projects that merely follow local standards may experience regulatory risks, stranded asset risks, or physical risks due to poor resilience—or all three. This could enhance the value of ESG standards for developing world investors, not only in identifying projects with shortcomings and thereby avoid risks, but in helping project owners see the benefit of going beyond local standards as a path to attract a broader range of international investors.

We believe the most interesting aspects of future research on ESG in infrastructure projects concern not merely evaluating their benefits, but in identifying the areas where ESG standards have the greatest value, and how this may change over time. In future surveys and case studies, the following questions are critical to address:

- What are the specific needs and demands of infrastructure asset owners and investors for ESG standards, in terms of breadth, objectivity, clarity and duration of applicability (design phase, construction phase, operation phase)?
- Among project owners and investors with substantial experience applying international ESG standards to infrastructure projects, how do they evaluate the strengths and weaknesses of existing standards, and what has been their value for the projects?
- How do different infrastructure sectors differ in their interest in, or acceptance of, international ESG standards? Are such standards of greater interest to energy and transport projects—given their greater land use and emissions characteristics—versus communications or water treatment projects, for example?
- How does project size influence the demand for international ESG standards, and is there a sweet spot where medium-sized projects in the design and construction phases most benefit from applying such standards?
- How do project owners and investors differ in their views of ESG standards for infrastructure? Do project owners focus more on reputational and marketing benefits, while investors focus more on risk mitigation potential?

This list is not comprehensive, but rather can provide a starting point for more in-depth research on where ESG standards for infrastructure currently stand, and where the field is likely to develop.

Developing a greater understanding of the current and future value of ESG standards for infrastructure has several benefits. Such research can help promoters and developers of ESG standards improve standards to meet the needs of investors and project owners. It can also help project owners and investors understand how they can benefit from applying ESG standards, and establish best practices in the field.

Given the enormous sums that will be required to meet the global demand for infrastructure, and the close relationship between infrastructure and the economic and sustainable development goals of the developing world, it is critical that ESG factors be taken into account in planning and evaluating infrastructure. Though ESG standards are still in their inception phase, they likely have an important or even central role to play in this process.

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