TIIP THE INVESTMENT INTEGRATION PROJECT | IRRC Institute

MEASURING EFFECTIVENESS:

Roadmap to Assessing System-level and SDG Investing

MARCH 2018

By William Burckart, Steve Lydenberg and Jessica Ziegler

Disclosures

Support for The Investment Integration Project (TIIP) research was provided by the Investor Responsibility Research Center Institute (IRRCi).

TIIP's mission is to help institutional investors understand the feedback loops between their investments and the planet's overarching systems – be they environmental, societal or financial – that make profitable investment opportunities possible. TIIP also provides these investors with the tools to manage the impacts of their investment policies and practices on these systems. Through this report and the *Measuring Effectiveness: Roadmap to Assessing System-level and SDG Investing – Supplemental Appendices*, we aim to help those with a long-term investment horizon more consciously visualize and articulate how these systems-level considerations are being incorporated into daily practice and measure their effectiveness.

The IRRCi is a nonprofit research organization that funds environmental, social and corporate governance research, as well research on the capital market context that impacts how investors and companies make decisions.

TIIP generally relies on information that is provided by the subject entity, self-reported to third parties by subject entities, or is otherwise publicly available. Such information has not been independently verified by TIIP.

The profiles contained in the *Supplemental Appendices* report should not be deemed an offer to sell or a solicitation of an offer to buy the securities or services of any of the subject entities noted, nor a recommendation concerning the merits of any such entity as an investment.

Table of Contents

Tables & Figures

Executive Summary

Investors are increasingly implementing approaches that aim to increase the health, stability, and resilience of the broader environmental, societal and financial systems within which they operate and upon which they rely to create long-term wealth, referred to by The Investment Integration Project (TIIP) as "system-level investing."

In this, the summary report of the Investors' System-level Impact Measurement project, TIIP provides investors with a roadmap for measuring the effectiveness of their system-level investing approaches—*Measuring Effectiveness: Roadmap to Assessing System-level and SDG Investing* (see Figure E.1). The roadmap helps investors ensure that they are moving beyond generating environmental or social impact through individual market transactions and alignment with broader system-level goals (e.g., the United Nations Sustainable Development Goals), and are also influencing related system-level change. That is, it helps them to answer the following question: *How can I measure whether I, as a long-term institutional investor, have contributed to promoting the long-term wealth-creating potential of the environment, society, or the financial system?*

Central to the findings of this report is that investors or third-party evaluators can now measure whether individually these organizations are using the Tools of Intentionality in ways that can lead to collaborative action and influence. Ultimately it is through the collective actions of a diverse set of members of the investment community using a variety of tools in differing ways that sufficient leverage can be achieved to exercise influence within today's complex, global, interconnected systems.

The roadmap borrows from lessons learned from the now decade-old impact investment movement and the investment and measurement practices recommended by notable investors and industry thought-leaders, but is primarily based on concepts adapted from systems dynamics thinking. It identifies four foundational characteristics of the environment, society, and financial system at which system-level investors can act to achieve maximum positive influence. They are:

► **Adaptability:** the environment, society, or the financial system's ability to adjust to shocks and major disruptions (i.e., high adaptability, or self-regulation, helps systems better adjust to unanticipated external shocks).

► **Clarity:** the coherence, flow, access to, and transparency of information about and within a system (i.e., more information flows among actors and about system components—and their interrelationships—increase investors' ability to understand their influence and act accordingly).

► **Connectivity**: the value of a good or service is determined in part by how many people use it and the more it is used the greater the benefit to the system (i.e., systems so structured have positive feedback loops that increase their health and resilience).

► **Directionality:** market incentives structured to encourage positive changes in stakeholder behavior (i.e., healthy systems are those in which influential actors enhance positive characteristics and align their actions with the systems' fundamental goals).

The roadmap recommends how long-term investors might assess their system-level investing approaches and measure their effectiveness and influence on system characteristics in three ways:

► **Assess system-level issues appropriate for their consideration and establish commensurate influence goals against which to measure progress**; that is, assess the consensus, relevance, effectiveness and uncertainty of an issue and determine which characteristics of its commensurate system to aim to influence (e.g., adaptability, clarity, connectivity, or directionality).

► **Assess potential usefulness of the tools available to investors for creating system-level influence**; assess whether implementation of selected tools is effective; that is, assess usefulness of tools that focus on field building, investment enhancement, and opportunity generation for influencing system characteristics and assess whether tools are being implemented effectively to achieve desired interim outcomes.

► **Measure influence on system characteristics**; that is, measure whether system-level change is taking place.

Figure E.1. Summary of Measuring Effectiveness: Roadmap to Assessing System-level and SDG Investing

Introduction

Investors are increasingly integrating environmental, social, and governance (ESG) factors into their investment management, both as a tool to minimize the risks and to maximize the rewards of individual securities and portfolios and to outperform indices.[1] At the same time, some investors are also exploring policies and practices to help them protect and enhance the broader environmental, societal and financial systems within which they operate and upon which they rely to create long-term wealth.[2] Many of these investors have embraced the United Nations (U.N.) Sustainable Development Goals (SDGs), which provide them with a set of goals related to systems' health and stability, discrete targets within the goals, and indicators for measuring progress toward the goals and targets.

Despite increasing and intentional investor focus on these big-picture issues—referred to in this report as "system-level investing"—few investors know about the tools available to them to manage their impacts on the environment, society, and the financial system and, in turn, to manage these systems' impacts on their portfolios. While many investors seek to "align" their investment practices with the SDGs, for example, they struggle with how to determine whether they are contributing to progress toward their achievement. Accordingly, this report provides investors with a roadmap for measuring the effectiveness of their system-level investing approaches—in the context of the SDGs and otherwise.

SYSTEM LEVEL INVESTING

Investors—namely those with long-term investment horizons (e.g., pension plans, sovereign wealth funds, endowments, foundations) or who identify as socially responsible or impact investors—are acutely aware of the impact that individual investments and investment portfolios can have on the environment and society. They are also increasingly convinced that the ESG performance of the entities that they invest in has a material effect on portfolio risk and return.[3]

Beyond contending with the effect of specific investments on the environment and society or considering enterprise ESG performance, many investors are also grappling with larger questions related to their impact on the broader environmental, societal, and financial systems within which they operate and the impact of the well-being of those systems on their investment practices. They are asking:

1. ***How do things like ecosystems under stress, societies in turmoil, and economic crises affect investment risk and return, especially given that the world is more interconnected now than ever before?***
2. ***What can we do, as individual investors and as a broader finance community, to help to stabilize and enhance the environment, society, and financial systems such that they benefit rather than harm our investments?***
3. ***How do we measure whether our efforts to stabilize and enhance these systems are effective?***

Some investors are also intentionally and proactively addressing the bigger-picture context of their investment selection and portfolio construction decisions. They are developing approaches to managing the relationship between their investment strategies and the health of environmental, societal, and financial systems. They are thinking beyond "What are the carbon emissions and working condition consequences of our investment in this enterprise or fund?" and considering "What can we do, as an individual investor and as a collective investment community, to address climate change and labor issues and, in turn, help to foster an environment and society that promotes the long-term growth and solvency of our assets?".

This report refers to these investors as "system-level" investors. All investors aim to maximize the returns of individual market transactions for a given level of risk. Some evaluate potential ESG risks and impacts of investments as part of these "security level" and "portfolio-level" transactions (see Table I.1). System-level investors incorporate these considerations into their daily investment management, while also acknowledging that their market transactions are affected by, and affect, the broader environmental, societal, and financial systems within which they take place. They consider

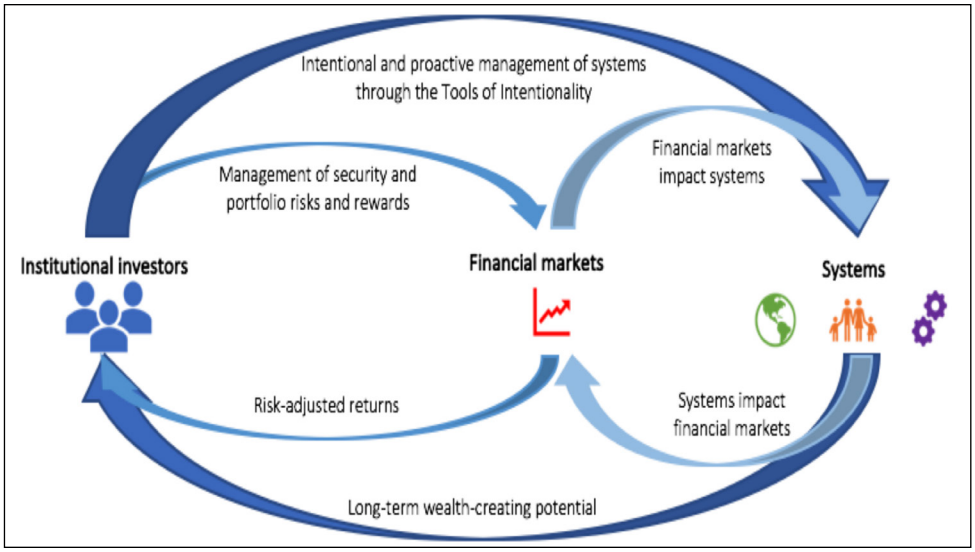
the long-term preservation of these systems not at the expense of financial return, but rather to protect and enhance it. They believe that finance and investment rely, in part, on the predictability and reliability of these systems, and that cumulative decision-making by investors affects these systems' wealth-creating potential which, in turn, can impact the performance of all portfolios.

Table I.1. Portfolio-Level Investing vs. System-Level Investing

Investment Considerations	Security-Level And Portfolio-Level Investing	System-Level Investing
Individual Market Transactions	☑	☑
Maximizing Short-Term Risk/Reward	☑	☑
Achieving Financial Returns Against a Benchmark	☑	☑
ESG Risk/Reward	☑	☑
Environmental or Social Impact of Individual Investments	☑	☑
Impact of Environmental, Societal, or Financial System Context On Market Transactions		☑
Maximizing Long-Term Risk/Reward		☑
Impact and Influence on Broader Environmental, Societal, and Financial Context		☑

Figure I.1 provides a summary illustration of the relationship between portfolio- and system-level investing. It depicts how portfolio-level investing focuses on managing the risks and rewards of individual securities and investment portfolios toward the achievement of risk-adjusted rewards. It also depicts how system-level investing incorporates these portfolio-level considerations while simultaneously managing investor impact on the health and well-being of the environment, society, and financial system to support their contributions to long-term wealth creation.

Figure I.1. Summary of Measuring Effectiveness: Roadmap to Assessing System-level and SDG Investing



THE U.N. SDGs: A CALL TO ACTION FOR SYSTEM-LEVEL INVESTORS

The United Nations' Sustainable Development Goals represent an important contribution to the investment community's understanding of system-level goals. The U.N. launched the SDGs in January 2016 as part of the 2030 Agenda for Sustainable Development. Structured to build on the success and momentum of their predecessor Millennium Development Goals (MDGs), the SDGs are a global commitment to addressing challenges to sustainable development through 2030 (see Figure I.2). The 17 SDGs are broader in scope than the MDGs in that they apply to all countries, not just developing countries, and have an increased focus on implementation issues, including the mobilization of financial resources, capacity-building and technology, and data. While the 2030 Agenda calls on governments to "take ownership" of the goals and to establish necessary national frameworks (e.g., policies, plans, and programs) and track progress, it also asserts that the goals can only be achieved with contributions from civil society, the private sector, and other stakeholders.

Figure I.2. U.N. SDGs

The issues highlighted by the SDGs have the hallmarks of those typically of interest to system-level investors. Notably, they focus on creating widespread, sustainable change that fortifies the overarching environmental, societal, and institutional systems for generations to come. The environmental, social, and institutional issues addressed in the goals are those for which there is widespread agreement that they are important to the successful functioning of commensurate systems; are those that pose relevant threats to—or opportunities for—investor portfolios; and are those that investors can intentionally and positively influence. In fact, according to the U.N. Commission on Trade and Development, substantial private sector investment is necessary to achieve the SDGs. It estimates that doing so will require an annual investment of nearly $4 trillion, approximately $1.5 trillion of which will come from public funds, leaving an annual funding gap of $2.5 trillion for the private sector to fill.[4]

Investors—particularly those with an interest in preserving the long-term health of the planet's overarching systems—are increasingly embracing this call to action and pledging to help fill funding gaps and support SDG achievement. Their enthusiasm might be due, at least in part, to the number of goals (i.e., 17 SDGs versus 8 MDGs), to the fact that the U.N. has developed 169 discrete indicators with which to measure progress toward the goals, and that each of the goals focus on eradicating a specific problem (as opposed to meeting a broad reduction objective). [5] The net of these characteristics has been "increased clarity (to the SDGs) which helps in paving the way for more private sector involvement."[6] Further, whereas the MDGs were widely interpreted as an "aid agenda," the SDG supporters view the SDGs as more of an "investment agenda" that promotes blended financing and consideration of investor risk/return expectations.[7] Among those investors and investor organizations supporting private sector contribution to the SDGs is Amit Bouri, the CEO of The Global Impact Investing Network (GIIN), who in 2016 encouraged investors everywhere to commit capital to impact investing efforts aimed at meeting goals and asserted "that every investor not already involved make at least one SDG-focused impact investment—and [to] get started... immediately."[8]

Over the past two years, the financial community has launched a series of investing frameworks, national level activities, and stock exchanges and indexes to encourage and support private capital investment in the SDGs, including:[9]

►**The GIIN mapped its Impact Reporting Investment Standards (IRIS)** impact indicators to the SDGs and profiled SDG investing strategies by several key investors;

►**The U.N. Global Reporting Initiative (GRI) and the World Business Council for Sustainable Development** partnered to develop the SDG Compass, a five-step guide for investors and companies to use to identify areas within their operations and value chains to contribute to the SDGs;

► **MSCI introduced the MSCI All Country World Index (ACWI) Sustainable Impact Index,** a public equity index that identifies companies that derive at least 50 percent of their revenues from one of five "actionable" themes derived from the SDGs: basic needs, empowerment, climate change, natural capital and governance;[10] and

► **Six of Sweden's biggest investors including Alecta, Folksam and The Church of Sweden** announced they will integrate the SDGs into their investment decisions.[11]

Financial institutions in the Netherlands have been particularly active when it comes to demonstrating the relevance of the SDGs to investors, supporting their involvement in achieving them, and encouraging financial system collaboration with government to cultivate an environment that enables SDG investment.[12] Dutch financial institutions and policymakers—led by pension fund managers PGGM and APG—are building an SDG investing agenda to integrate action across Dutch investment value chains. Their focus is on identifying opportunities for "sustainable development investment" in the SDGs across all asset classes that could result in "tangible returns for institutional investors."[13]

Despite increasing private sector interest in investing in the SDGs, most of these investors are in the process of "aligning" themselves with the SDGs—that is, publicly committing that some portion of their investments address the issues outlined in one or more of the goals. Few have attempted to measure whether they are meaningfully contributing to progress toward their achievement. In other words, although some investors report how their investments relate to specific SDGs, they are not necessarily attempting to influence overall progress toward achievement of the goals or measuring the effectiveness of such attempts.

GUIDE TO THE REPORT

Despite emerging investor focus on environmental, societal, and financial system issues and private sector embrace of the SDGs, little guidance exists to help investors develop and execute system-level investing strategies, manage their influence on systems and systems impacts on their investments, or measure their effectiveness. The purpose of this report is to do just that: to provide investors with a preliminary roadmap for measuring the effectiveness of their system-level investing strategies, including those that move beyond alignment with the SDGs and that can contribute to progress toward achieving them. It is intended to ignite thoughtful dialogue and is not meant to represent final guidance on the approach.

Section 1 outlines the preliminary roadmap for measuring the effectiveness of system-level investing approaches. Section 2 provides an example of how that roadmap can be used to address the environmental system issue of climate change, one of the most pressing issues facing investors today and one of the 17 SDGs (i.e., Climate Action). The report concludes in Section 3 by summarizing key takeaways and discussing the implications of the ISIM project for future work on developing system-level strategies, investor contribution to progress toward the SDGs, and measuring the impact and influence of system-level investment.

A companion document to this report, *Measuring Effectiveness: Roadmap to Assessing System-level and SDG Investing—Supplemental Appendices*, contains a series of appendices that support and provide additional context for and information about the concepts discussed. Appendix A provides more information on system-level investing through listing and responding to frequently asked questions about the approach including "How is system-level investing different from ESG integration and impact or responsible investing?" and "Who is currently engaged in system-level investing?". Appendix B describes the Tools of Intentionality—investor approaches to generating system-level influence—and provides examples of real-life investor use of each tool to pursue system stabilization and influence goals. Appendices C, D and E contain summary information on select of the various measurement frameworks, investor approaches, and related resources that TIIP examined to inform the roadmap presented in Section 1. Appendix F addresses institutional investor skepticism about system-level investing raised during interviews conducted in support of the report. Appendix G provides details on the project this report relates to and information about the research methods.

1. Roadmap to Measuring the Effectiveness of System-Level Investing Approaches

Despite emerging investor focus on environmental, societal, and financial system issues and private sector embrace of the United Nations Sustainable Development Goals, little guidance exists to help investors develop and execute measurable system-level investing strategies. The purpose of this report is to propose a preliminary roadmap for measuring the effectiveness of the system-level strategies that investors have implemented individually. It may also be used to assess the potential for effective collective action by these investors as a whole.

Whereas impact investors and others aim to contribute to environmental or social impact through individual market transactions (i.e., portfolio-level strategies) and often to align with a broader system-level goal (e.g., an SDG), system-level investors strive to realize such impact and alignment while also focusing on influencing system-level change (see Box 1.1).

Investors, individually or collectively, can achieve system-level influence when they help to alter the paradigms (prevailing norms, standards, and structures) of the environment, society, or financial system. System-level investors aim to address these fundamental paradigms in order to preserve or enhance systems' wealth-creating potential.[14] Generating system-level influence is as important as having an impact individually or aligning that impact with broader environmental or social goals; it is the foundation upon which investors can base consistent, system-wide impact over time and protect the ability of their funds to generate returns in the long term.

The remainder of this section describes *The Roadmap to Assessing System-level and SDG Investing*. The roadmap integrates and builds on existing best practices for measuring systemic investment impacts. Given that the predominant impact measurement approaches were developed for or otherwise target impact investors, the roadmap builds on the strengths of earlier approaches and applies relevant lessons learned from these approaches to its assessment of system-level investing influence. *Section 2: The Roadmap: Practical Applications* describes progress to date in how investors are increasingly using these tools in system-level strategies for addressing climate change.

Box 1.1. Impact, Alignment, and Influence

Impact

►Direct incremental change caused by investor individual market transactions (portfolio-level activities)

►Quantifiable assessment of established performance indicators

►Might signal that change is occurring within a system, though not a goal of the strategy

Alignment

►Direct incremental change caused by investor individual market transactions (portfolio-level activities) that occurs in alignment with, or in the context of, a broader environmental, societal, or financial system goal

Influence

►Altering paradigms (prevailing norms, standards, and structures) of investors, corporations, or governments and regulators related to the environment, society, or financial system

►Convincing stakeholders that systems impact them and that they can act to determine that impact

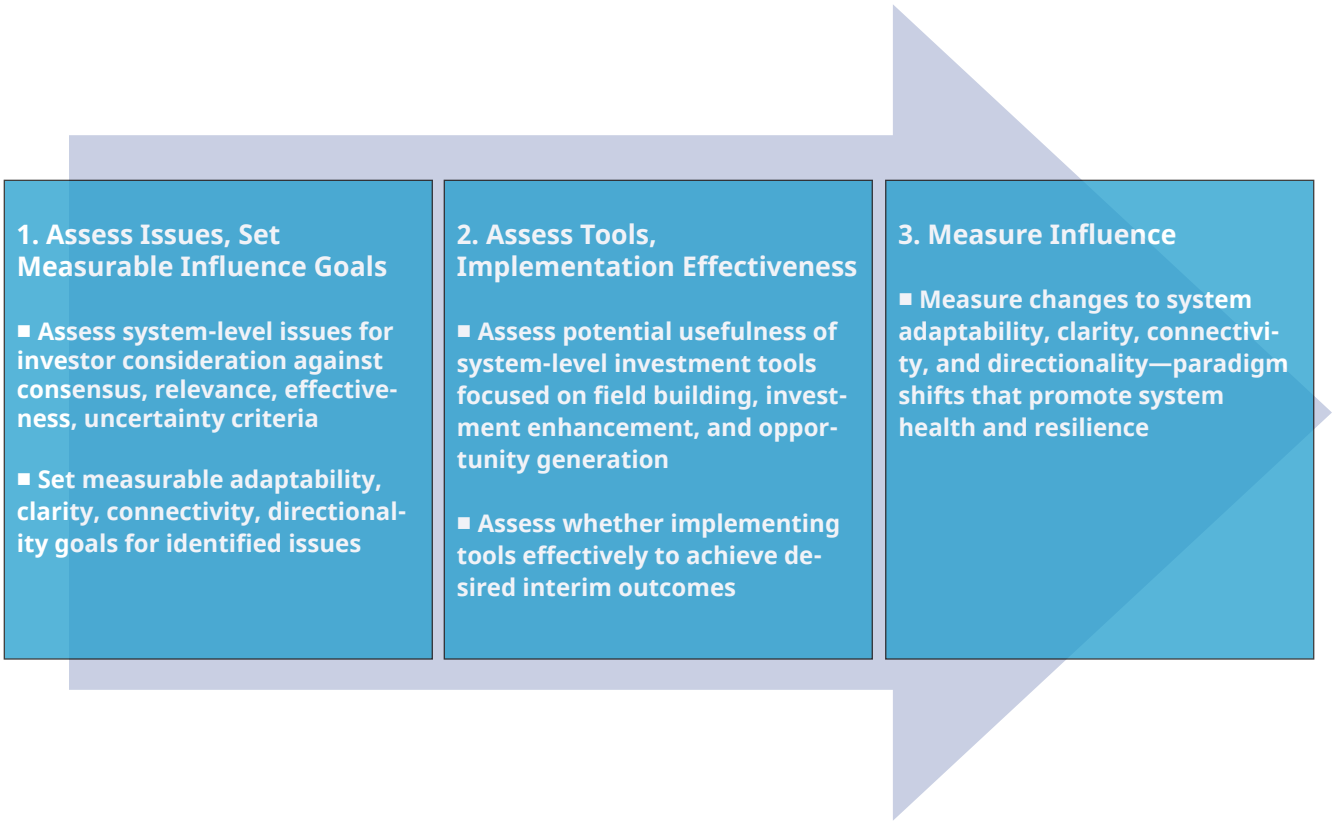
►Fortifying foundations for lasting impacts over time

ROADMAP TO ASSESSING SYSTEM-LEVEL AND SDG INVESTING: A SUMMARY

The Roadmap to Assessing System-level and SDG Investing outlines a three-step process for measuring the effectiveness of system-level investing approaches (i.e., assessing their potential for influence) (see Figure 1.1). It borrows from lessons learned from impact investment and best practice in the current investment community. It begins by assessing the appropriateness of system-level issues for investor consideration against the criteria of consensus, relevance, effectiveness, and uncertainty and setting measurable goals for influencing systems (Step 1).

It then proceeds to assessing the potential usefulness and effectiveness of system-level investing tools used to achieve the goals (Step 2).

Figure 1.1. Summary of Measuring Effectiveness: Roadmap to Assessing System-level and SDG Investing



Finally, the roadmap identifies four foundational characteristics of environment, society, and financial systems that collaborative action by investors can address: adaptability, clarity, connectivity, and directionality. It proposes metrics for measuring investors' potential to influence these characteristics and, ultimately, for measuring their effectiveness in shifting paradigms and enhancing systems' wealth-creating potential (Step 3).

STEP 1: ASSESS POTENTIAL ISSUES TO FOCUS ON; ESTABLISH MEASURABLE GOALS FOR GENERATING SYSTEM-LEVEL INFLUENCE

Investors seeking to generate tangible influence on systems establish discrete benchmarks (goals) against which to measure progress.

Leading impact investors emphasize that such measurement is most effective when investors have clearly defined the goals that they are measuring progress toward and established their reasoning for the need to collect impact data.[15] Step 1 of the roadmap, therefore, guides investors in identifying challenges that they can most appropriately and effectively address through a measurable system-level investing approach that builds on portfolio-level impact and alignment and focuses on achieving environmental, societal, or financial system influence.

Assess system-level issues appropriate for effective integration into investment strategies. Investors might be unsure about which environmental, societal, or financial system issues they should aim to influence as part of a system-level investing approach. Because the potential range of system-related challenges that investors might address is substantial and because not all considerations can be justified as system-level in their scope, investors need criteria against which to assess various potential considerations. System-level issues worthy of, or that justify, investor consider-

ation and attention—that is, those issues that will help investors to enhance the long-term health of the environment, society, and financial system and their investments—conform to four criteria (see Table 1.1):[16]

► **Consensus** about the issue's importance;

► **Relevance to investors—**the potential for the issue to affect investor portfolios positively or negatively;

► **Potential for the investors' policies and practices** to effectively impact or influence the issue (effectiveness); and

► **Uncertainty about potential outcomes** caused by disruptions related to the system-level issue.

These four criteria help determine if a sufficient rationale for investors to focus on the system exists and assist them in assessing the relative importance among issues to which time and resources might be devoted. Meeting these four criteria is a relatively high bar and one implication of applying this discipline is that only a limited number of system-level considerations will be appropriate for investors at any given time.

Table 1.1. Criteria for Assessing and Justifying Investor Consideration of System-Level Issues

	Consensus	Relevance	Effectiveness	Uncertainty
	The Issue...			
	Is debated globally and stakeholders agree on its importance	Has substantial potential to impact long-term financial performance across asset classes	Could be substantially impacted or influenced by investors	If unaddressed, could lead to systemic disruptions that are difficult to predict or quantify
	Ensures Investor Consideration of Issues...			
	That are widely debated, versus those that are narrowly conceived or idiosyncratic	That are broadly relevant to their long-term financial interests	For which their decision-making can effectively produce impact and influence	With substantial potential to create uncertainties
Example	*Access to fresh water:* Broadly recognized as a crucial issue within environmental and societal systems – life is not possible without it	*Positive employee and labor relations:* Crucial to the long-term stability and growth of markets, economies, and firms – and, therefore, to investors	*Access to healthcare:* Investors can support companies or technology that reduce the costs of associated products and services, companies that market to people at the bottom of the pyramid, or otherwise collaborate to increase access	*Climate change:* It is difficult to predict the occurrence and severity of associated outcomes such as changing sea levels and forced human migration
Assessment	Consideration has become enshrined in global treaties or conventions or otherwise finds consensus among globally recognized authorities	Evidence exists that the issue exposes industries, asset classes, and the economy to positive or negative long-term financial impact	Ability to contribute to field building, investment enhancement and investment opportunity generation	System requires strengthening to contend with apparent risks

Source: Lydenberg, Steve. Systems-Level Considerations and the Long-Term Investor: Definitions, Examples, and Actions. The Investment Integration Project: 2017.

Set measurable influence goals for identified systems and issues. Once investors determine which systems and issues justify their consideration, they then set goals for the influence they intend to have on the systems and issues identified. In doing so, investors can establish specific benchmarks against which to measure their system-level investing progress.

System-level investors seek to generate system-level influence in addition to portfolio-level impact or alignment. However important, impact and alignment alone will not necessarily create the broader changes that protect and enhance the long-term wealth-creating potential of environmental, societal, or financial systems.

In many, if not most cases, civil society or international and national governments have already established system-level goals in the form of specific progress indicators such as those already promulgated in relation to the 17 Sustainable Development Goals (SDGs). In addition to specific system-level progress indicators, systems dynamics thinkers assert that those seeking to influence system-level change at a fundamental level can do so by shifting the paradigms within the systems themselves. In her work *Thinking in Systems: A Primer*, field pioneer Donella H. Meadows identified 12 leverage points—or types of influence—that system influencers can achieve.[17] These leverage points can be usefully adapted into a subset of four characteristics of environmental, societal, and financial systems that investors can act individually and collectively to influence (i.e., to enhance the wealth-creating potential of):[18]

► ***Adaptability:*** *the environment, society, or the financial system's ability to adjust to shocks and major disruptions (i.e., high adaptability, or self-regulation, helps systems better adjust to unanticipated external shocks).*

► ***Clarity:*** *the coherence, flow, access to, and transparency of information about and within a system (i.e., more information flows among actors and about system components—and their interrelationships—increase investors' ability to understand their influence and act accordingly).*

► ***Connectivity:*** *the value of a good or service is determined in part by how many people use it and the more it is used the greater the benefit to the system (i.e., systems so structured have positive feedback loops that increase their health and resilience).*

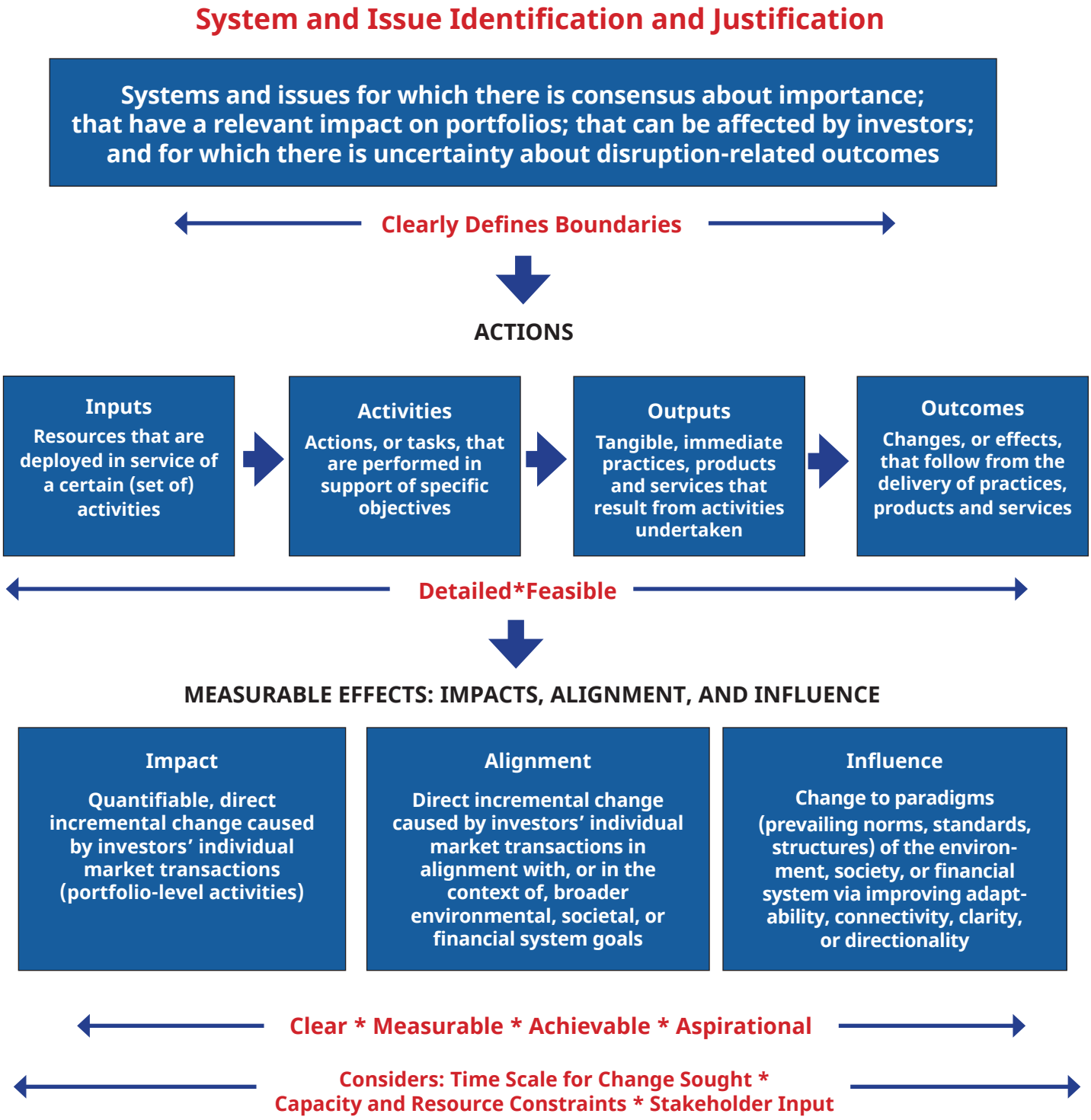
► ***Directionality:*** *market incentives structured to encourage positive changes in stakeholder behavior (i.e., healthy systems are those in which influential actors enhance positive characteristics and align their actions with the systems' fundamental goals).*

The specific ways that investors aspire to influence systems, their goals, and goal-setting processes will vary based on the systems and issues that they focus on, resource and capacity considerations, and stakeholders. However, existing impact investment frameworks provide useful guidance applicable to various types of investors—including system-level investors—and across a spectrum of contexts.

Investors, consultants, and foundations alike recommend that investors establish and refine goals for identified issues within the context of a logic model or something like it (e.g., a theory of change, theory of value creation, results chain, investment thesis, or impact thesis). Regardless of which framework they use, these groups agree that such goal-setting tools are beneficial and should include core components such as: (a) specific, achievable, clearly-articulated goals (i.e., outcomes and impacts); (b) realistic strategies for achieving related goals (i.e., inputs, activities, outputs); and (c) stakeholder input and responsibilities.[19]

As is outlined in Figure 1.2 below, *Considerations for System-Level Goal-Setting*, investors can integrate the best practices of impact investing goal-setting approaches into their system-level investing goal-setting alongside additional considerations necessary for ensuring that their stated goals reflect system-level objectives. In general, for most system-level challenges, progress indicators for various goals have already been widely discussed and agreed upon, while the setting of goals and progress indicators for system characteristics is less fully developed.

Figure 1.2. Considerations for System-Level Goal-Setting



Sources: This figure was informed by the work of: Burckart, William, Steve Lydenberg and Jessica Ziegler. Tipping Points 2016: Summary of 50 Asset Owners' and Managers' Approaches to Investing in Global Systems. The Investment Integration Project and IRRC Institute. 2016; Lomax, Plum, Abigail Rotheroe and Peter Harrison-Evans. Investing for Impact: Practical Tools, Lessons, and Results. New Philanthropy Capital: November 2015; Social Impact Investment Taskforce (Established under the UK's presidency of the G8). Measuring Impact: Subject paper of the Impact Measurement Working Group. September 2014; The Rockefeller Foundation. Situating the Next Generation of Impact Measurement and Evaluation for Impact Investing. October 2016; www.mfdr.org. Accessed between September 27 and 28, 2017.

Note: At this stage in developing measurement approaches, investors might not know which actions they will undertake to achieve their goals, at least not definitively. This is not problematic. Investors will continuously refine their considerations for system-level goal-setting as their system-level investing approach evolves. Investors need only at first determine preliminary inputs, activities, outputs, and outcomes as part of their goal-setting process.

Goal-setting exercises can also draw on work that has been done in recent years on the development of sustainability indicators and their measurement. The development of these indicators calls for initial establishment of achievable, measurable goals reflective of capacity constraints and stakeholder input. These goals should: (1) define the boundaries of the system and issue that the investor is targeting, specifying whether they are focusing on an issue within the context of a specific local area, globally, or relating to some other clearly defined area; (2) identify the time scale for the change sought, specifying the time frame within which the investor intends to influence change; and (3) specify the desired change in the quality or characteristic of the system in question.[20]

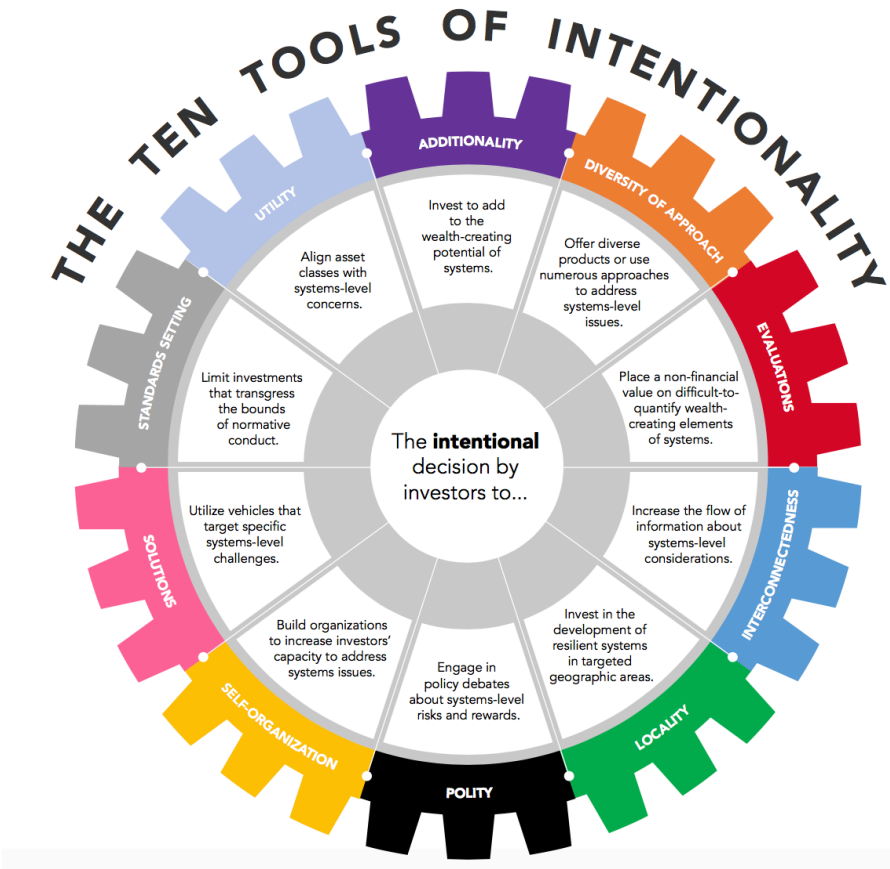
STEP 2: ASSESS POTENTIAL USEFULNESS OF SYSTEM-LEVEL INVESTMENT TOOLS; ASSESS EFFECTIVENESS OF TOOL IMPLEMENTATION

Once investors determine and justify which system-level issues to integrate into their investment strategies and establish corresponding goals, they can then determine how best to achieve the goals.

Investors might use what TIIP calls the *Tools of Intentionality* to achieve their system-level influence goals (see Figure 1.3). Some of these tools derive from investment decision-making and daily portfolio management actions. Others reflect ways in which investors can exert influence outside of, or beyond, daily investment and portfolio management techniques.

These tools can be grouped according to three broad or overarching tactics through which investors can maximize their potential to achieve system-level influence, and against which they can assess the effectiveness of their implementation.

Figure 1.3. The Tools of Intentionality



Source: Steve Lydenberg, William Burckart and Jessica Ziegler. Effective Investing for the Long Term: Intentionality at Systems Levels. The Investment Integration Project and High Meadows Institute. 2017.

► ***Field building (Self-Organization, Interconnectedness, Polity).*** Investors use field building tools to help to create an infrastructure that addresses the challenge of collective action in order to influence complex systems—that is, to build organizations that can pool resources or act collectively, develop a shared knowledge base regarding systems' complexities, and work to assure alignment of investors' goals with those of government and other influencers of public policy and vice versa. Given the highly competitive nature of the investment community and its tendency to encourage free riding, field building is essential to achieving influence at systems levels.

► ***Investment enhancement (Solutions, Standard Setting, Diversity of Approach).*** Investors use investment enhancement tools to extend traditional investment activities—including investment policy and belief statements, security selection, engagement and activism, themed and targeted investments, and manager selection and monitoring—to exert influence on the characteristics of a system.

They use these tools to allocate firm resources to the creation of solutions to system-level challenges, the public endorsement of norms and standards relating to the directionality of the system, and the use of a diversity of approaches and capturing the full range of client concerns, in relation to the challenges being addressed.

► ***Opportunity generation (Additionality, Locality, Evaluations, and Utility).*** Investors use opportunity-generation tools to enhance the richness of the pools of capital within a system. To assure long-term viability, investors can address disparities of opportunity among stakeholders within a system, locally as well as globally; incorporate into decision making the difficult-to-qualify overall value of environmental, societal and financial systems; and use the distinct natural function of each investment asset class to enhance that value.

Many investment techniques already exist to manage the risks and rewards of individual securities and portfolios. What investors are increasingly seeking is techniques for managing the risks and rewards of the broader environmental, societal, and financial systems within which these individual market transactions take place.

As part of a 2016 analysis of 50 asset owners' and managers' approaches to system-level investing, TIIP found that the investors that most notably embrace system-level investing have deliberately—or intentionally—started to use a number of tools and techniques to addresses major global challenges while achieving competitive returns. [21] In other words, although investors use limited versions of the tools to select securities and build portfolios, intentionally using them to target system-level considerations is not necessarily a natural part of daily portfolio management or decision making; instead, investors purposefully use these tools to build on traditional portfolio management and extend their actions to effectively achieve system-level influence.

► ***Assess the potential usefulness of tools available to investors for generating system-level influence.*** Investors can use a combination of the tools to influence systems and contribute to paradigm shifts within systems. Broadly speaking, these tools can influence any or all of the characteristics of a system, but some will be better suited to influence particular characteristics than others depending on context and circumstances.

For example, field building tools may be of most crucial use when investors are initially confronting a system-level challenge. In other circumstances, investment-enhancement tools can prove especially helpful in increasing the adaptability and clarity of a system.

Table 1.2 describes these tools and their general usefulness. These descriptions are suggestive, not prescriptive, and are intended to prompt investors' thinking regarding which tools might be best suited to helping them achieve their specific system-level influence goals at a given time based on their resources, experience, capacity, history and other circumstances.

Table 1.2. Criteria for Assessing Potential Usefulness of Tools to Influence System Characteristics

	Tool	Example Criteria for Assessing Tool Usefulness
Field Building	**Self-Organization**	Particularly well-suited to enhance **connectivity** and **directionality** within <<system-level issue>> by facilitating investors in: ☑Creating on-going organizational structures that builds the capacity of the investment community to address <<system-level issue>> and strengthens the overall resilience of <<system-level issue>> ☑Recognizing the need for investors' concerned with the stability and resilience of <<system-level issue>> to participate in industry-led capability-enhancing organizations ☑Understanding the long-term rewards that accrue to investors and their portfolios from these organizations' <<activity>> ☑Taking a leadership role in the creation and management of such organizations
	Interconnectedness	Particularly well-suited to enhance **clarity** and **directionality** within <<system-level issue>> by facilitating investors in: ☑Sharing knowledge useful in the management of <<system-level issue>> risks and rewards ☑Promoting <<forum>> for communications among peers on <<system-level issue>> ☑Providing leadership in recognizing the importance of this mutually beneficial <<system-level issue>> knowledge for all investors
	Polity	Particularly well-suited to enhance **directionality** within <<system-level issue>> by facilitating investors in: ☑Communicating clearly about the <<government or regulatory body>> considerations of <<system-level issue>>, financial system reporting, and mandated disclosure of environmental, social and governance (ESG) data ☑Taking a leadership role in promoting public policy reform ☑Recognizing that resources allocated to Polity have the potential to alter the basic "playing field" on which investment is conducted in ways that can benefit all asset owners and managers
Investment Enhancement	**Solutions**	Particularly well-suited to enhance **adaptability** within <<system-level issues>> by facilitating investors in: ☑Acknowledging the need to contend with the greatest <<system-level issues>> of the day ☑Seeking investments that are not only profitable but can also change the dynamics of <<system-level issue>> in positive ways ☑Having a clear vision of the most important aspects of alternative and innovations within systems
	Standard Setting	Particularly well-suited to enhance **directionality** within <<system-level issues>> by facilitating investors in: ☑Communicating broadly on issues they believe are fundamental to the <<system-level issue>>, avoiding those that violate broadly accepted norms and favoring those that support them ☑Establishing positive standards or principles for <<industry or asset class>> on <<system-level issue>> that can promote informed discussion and that increases support within the investment and corporate communities for policies that support the health of the <<system-level issue>> ☑Creating a level playing field of normative behavior that encourages competition based on a "race to the top" rather than to the bottom that simultaneously generates an increasing array of viable investment opportunities
	Diversity of Approach	Particularly well-suited to enhance **adaptability** and **directionality** within <<system-level issues>> by facilitating investors in: ☑Recognizing complexities within and among <<system-level issues>> that are relevant to <<investors>> ☑Seeking to maximize their positive influence on <<system-level issue>> by adopting a diverse range of initiatives to help manage risks and rewards at this <<system-level issue>> ☑Seeking to impact across a range of <<system-level issues>> by serving a variety of clients with a diverse set of systems-level concerns and offering varied approaches to addressing these concerns

Table 1.2. (Continued from Previous Page)

Opportunity Generation	**Additionality**	Particularly well-suited to enhance **adaptability** within <<system-level issue>> by facilitating investors in: ☑Recognizing the market potential of underserved regions and segments of the population ☑Promoting healthy growth by identifying a diverse array of unrecognized and underfunded <<system-level issues>> markets and opportunities that fill capital gaps in the marketplace ☑Understanding how these markets and opportunities have the potential to produce competitive returns
	Locality	Particularly well-suited to enhance **connectivity** within <<system-level issue>> by facilitating investors in: ☑Having a deep understanding of a specified geographic area, including the <<system-level issue>> and themes that are crucial to local sustainable development ☑Identifying opportunities for promoting local prosperity and strengthening local economies, culture, and ecology, while generating competitive returns ☑Considering both the short-term and long-term implications of a project and these same implications for the broader community within which a project takes place
	Evaluations	Particularly well-suited to enhance **directionality** by facilitating investors in: ☑Recognizing that sources of long-term wealth creation and societal and environmental value often cannot be easily assigned a price ☑Seeking to identify the <<system-level issue>> characteristics that, although difficult to quantify, generate the stability and predictability necessary for successful long-term investment ☑Communicating their evaluation of the long-term value creation potential of <<system-level issue>> to other key stakeholders in that system
	Utility	Particularly well-suited to enhance **adaptability** within <<system-level issue>> by facilitating investors in: ☑Understanding the differing ends for which <<asset classes>> and their markets have been designed ☑Selecting individual investments that are aligned with these <<asset classes>> specific purposes and, when appropriate, acting to enhance this alignment ☑Benchmarking the performance of their investments against the appropriate social and environmental functioning of the asset class in which they are investing

►Assess whether implementation of selected tools is effective in leading to collaborative action. Investors or third-party evaluators can now measure whether individually these organizations are using of the Tools of Intentionality in ways that can lead to collaborative action and influence. Although initiatives by individual investors can, under the right circumstances, have influence at system levels, more typically it is through the collective actions of a diverse set of members of the investment community using a variety of tools in differing ways that sufficient leverage can be achieved to exercise influence within today's complex, global, interconnected systems.

Examples of key generic indicators of effective use of each tool are outlined in Table 1.3 below and are intended to help investors and evaluators assess and measure the effectiveness of their implementation. We have grouped these Tools of Intentionality into three types of activity: field building, investment enhancement, and opportunity generation, which together can create long-term value for society and help ensure sustainable returns for investors and their portfolios.

For each of the tools we have proposed measurable, key actions that investors can take to support the overall goals of enhancing collaborative action and communal wealth building, within the context of what remains a competitive investment industry.

Table 1.3. Key Indicators for Assessing the Effective Implementation of Tools

	Tool	Example Criteria for Assessing Implementation Effectiveness
Field Building	**Self-Organization**	Launched, led, or actively participated in an organization that: ☑Increased the capacity of the financial community <<in this way>> to address <<system-level issue>> through <<activity>> ☑Encouraged <<issuers of securities in various asset classes)>> <<in this way>> to respond to concerns about <<system-level issue>> through <<activity>> ☑Encouraged <<government or regulatory body>> to establish policy that facilitates increased or improved investments in solutions to <<system-level issue>> or that discourages investments that perpetuate <<system-level issue>>
	Interconnected-ness	☑Established or otherwise promoted <<forum>> for communication among investors about <<system-level issue>> ☑Helped investors (<<specify>>) gather, analyze, or incorporate into their investment analysis data on <<system-level issue>> ☑Encouraged <<issuers of securities in various asset classes>> to disclose reliable data on performance related to <<system-level issue>> through <<activity>> ☑Provided information to <<issuers of securities in various asset classes>> about the importance of <<system-level issue>> through <<activity>>
	Polity	Led efforts that encouraged <<government or regulatory body>> to establish policy that facilitates increased or improved investments in solutions to <<system-level issue>> or that discourages investments that perpetuate <<system-level issue>>
Investment Enhancement	**Solutions**	Developed funds to solve, not simply profit-from, <<system-level issue>> challenges
	Standard Setting	☑Led or otherwise participated in the development of standards for investments in <<industry or asset class>> based on widely accepted norms related to <<system-level issue>> that discourage investments that violate those norms and encourage investments that support or meet agreed-upon criteria for positive practice to be used by <<investors>> ☑Set standards for investments in <<industry>> based on widely accepted norms related to <<system-level issue>> that discourage investments that violate those norms and encourage investments that support or meet agreed-upon criteria for positive practice
	Diversity of Approach	Developed and provided a diversity of products to serve a wide variety of client system-related concerns; encouraged peers to take a diversity of actions with regards to <<system-level issue>> and/or to provide a diversity of products to serve a wide variety of client system-related concerns
Opportunity Generation	**Additionality**	☑Developed investment products that target underserved communities or otherwise invested in or encouraged investment in the development of markets to serve them ☑Led efforts to encourage <<government or regulatory body>> to facilitate investments in underserved communities
	Locality	☑Helped investors (<<specify>>) cultivate a deep understanding of a specified geographic area (e.g., issues and themes crucial to local sustainable development) by <<activity>> and facilitated <<amount/type of>> investment in the area as a result ☑Invested in corporations focused on promoting the prosperity of a local economy, culture, or ecology through their products or services
	Evaluations	☑Incorporated difficult-to-value assets related to <<system-level issue>> (e.g., natural, human and societal capitals) in investment analysis; developed an approach to doing so that can be used by other investors ☑Required that <<issuers of securities in various asset classes>> provide data on difficult-to-value assets related to <<system-level issue>> (e.g., natural, human and societal capitals) into their business models; encouraged corporations to incorporate such assessments into their business models
	Utility	Pursued investments that maximize the societal purpose that an asset class was designed to fulfill

Investors assessing the strength of their own activities in these areas, as well as evaluators of these investors, will come to the measurement process with their own thresholds for what constitutes a meaningful effort, but the underlying basis for these metrics is clear: each represents an action that investors can take that will enhance collaborative efforts to influence at a system level. In preparing the 100 profiles on investors in its Benchmark database, TIIP has set thresholds for assigning credit for each of the Tools of Intentionality that are based on these key activities.

STEP 3: MEASURE THE POTENTIAL FOR INFLUENCE

Once sufficient numbers of investors individually have determined goals for their system-level investing approaches and put the Tools of Intentionality into action toward achieving those goals, it is possible for the investors themselves or evaluators to establish when critical thresholds have been reached in creating the potential for influence at the system level. Assessments of this sort not only ensure that the approaches investors are using are effective, but also promote transparency and accountability.

The impact investing community has already developed a number of approaches to measuring the impact of investors' security- and portfolio-level actions, and many investors have started to assert the alignment of their investments with system-level goals such as those of the SDGs, but few in the financial industry have developed ways to determine investors' influence on systems.

This roadmap introduces a method for measuring the potential for investors to influence system-level issues. It builds on best practices in impact and alignment measurement that can help investors:

►**Quantify the impacts of their daily portfolio management** to indicate the direct incremental change that they effect en route to achieving a larger system-level goal and that provides a snapshot in time that change is occurring within a system (Impact); and

►**Determine whether the impact that they generate through daily investment and portfolio management** aligns with, or occurs in the context of, broader environmental, societal, or financial system goals (Alignment).

At the same time, the roadmap also provides them with a framework against which they can measure how potentially effective they are at changing systems' characteristics (i.e., altering the paradigms (prevailing norms, standards, and structures)) of the environmental, societal, or financial system in a way that promotes system health and resilience (Influence).

Step 3 of the roadmap highlights impact and alignment measurement practices that are particularly useful to system-level investors and introduces a preliminary framework for assessing system-level influence. Detailed information on the measurement frameworks, investor measurement and management approaches, and other measurement, alignment, and assessment resources used to inform the approach outlined below can be found in supplemental appendices in this report's companion document.

Measure impact: direct portfolio-level effect on incremental change. While this report focuses on the assessment of system-level influence, the importance of continued portfolio-level impact measurement cannot be overstated. Gauging quantifiable, direct incremental change caused by an investor's individual market transactions (i.e., portfolio-level activities) is a crucial building block to determining the alignment of impact with broader system-level goals and, ultimately, to assessing investor influence on systems.

Socially responsible and impact investors, and many investors with long-term investment horizons (e.g., pension plans), share a commitment to ensuring that individual investments and portfolios "do no harm" to society or the environment or that their investments and portfolios proactively achieve positive social or environmental impact. A plethora of resources for measuring the related non-financial impacts of these portfolio-level activities and goals has emerged in recent years. When done correctly, impact measurement can help to: [22]

► **Assess** quantifiable value for impact investors and their stakeholders;

► **Mobilize** more impact investment capital, thus increasing the aggregate impact of the approach

► **Increase** impact investment's transparency and accountability to impact goals.

Among the comprehensive measurement and management tools, metrics, and frameworks that impact investors have developed are:

► **The G8's Social Investment Taskforce Working Group on Measurement**, which emphasizes four phases of impact measurement: Plan, Do, Assess and Review.[23]

►**The Impact Management Project (IMP)**, which identifies five shared fundamentals for understanding and managing impact, including determining (1) what outcomes the effect relates to, and how important they are to people (or the planet) experiencing it; (2) how much of the effect occurs in a designated time period; (3) who experiences the effect and how underserved are they in relation to the outcome; (4) how the effect compares and contributes to what is likely to occur anyway; and (5) the risk factors that are material and how likely the effect is from the expectation. [24]

►**The Global Impact Investing Network's (GIIN) Impact Reporting Investment Standards (IRIS),** which establish a catalog of "generally accepted performance metrics that leading impact investors use to measure social, environmental, and financial success, evaluate deals, and grow the sector's credibility." [25]

Together, these approaches encompass the emerging practices that investors can consider when establishing impact measurement approaches. These approaches may include at a high level: (a) systematically setting goals using a logic model or theory of change; (b) developing a measurement framework that specifies data collection and analysis approaches and utilizes existing metrics and aligns with existing standards to the extent possible; (c) carefully, efficiently, and effectively collecting and storing data using available technologies; (d) validating data (i.e., verifying that it "is complete and transparent by cross-checking calculations and assumptions against known data sources"); [26] (e) analyzing data, to understand actual impact versus stated impact goals; (f) clearly, coherently, credibly, and reliably reporting impact information to stakeholders to inform decision-making; and (g) making data-driven investment management decisions, which address stakeholder recommendations and are reflected in revised logic models and theories of change.

Measure alignment: impact in the context of system-level goals. Some investors have attempted to progress beyond measuring the system-level impacts of their investments and portfolios and to determining the extent to which their investments and portfolios align with broader system-level goals (e.g., the SDGs). This important "next step" beyond impact measurement not only helps investors to understand their individual, direct contribution to system-level goals, but it also ensures that they are more effectively deploying capital towards objective, commonly agreed upon global priorities as opposed to subjective, isolated ends that might work at cross-purposes with the rest of the investment community.

A consortium of Dutch financial institutions and policymakers—led by pension fund managers PGGM and APG—is among the financial community stakeholders advocating private sector investment in the SDGs. An initial report published by the group recommends ways to accelerate private sector investment in line with the SDGs and ways that collaboration between government and the financial sector can create an enabling environment for such investment. [27] The report also outlines "potential sustainable development investment (SDIs) opportunities that could transform the U.N.'s targets into tangible returns for institutional investors," including opportunities linked to specific SDGs and all asset classes. [28]

Beyond endorsing private sector investment in the SDGs, the Dutch consortium also provides investors with guidance—including specific impact indicators by goal—for measuring the alignment of their assets with the SDGs that builds on the GIIN's IRIS framework.[29] The consortium suggests that investors map, or crosswalk, the GIIN's IRIS indicators (and, specifically, the project impact and operational impact indicators) to the U.N.'s SDG Compass indicators (see Box 1.2).[30] In doing so, the consortium aims to "design a methodology broadly supported by investors, banks and insurers to measure their contribution to the SDGs, focusing on positive impacts" and that specifically enables

Box 1.2. Impact Indicators for SDG 1: No Poverty

	Product (or service) Impact indicator (PI) or Operational Impact indicator (OI, in italics)	Breakdown to gender (G), vulnerability (V), income group (I) or location (L), according to UN (☑) or Working Group (✓)				Unit of measurement for aggregation
		G	V	I	L	
1 NO POVERTY	1.1 % of revenue from products serving low income groups			✓		€
	1.2 Number of people provided with access to financial services, incl. microfinance	☑[18]	☑	☑	☑	# people

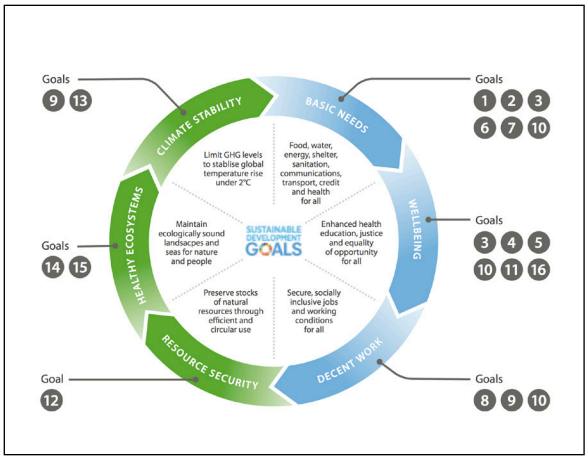
Source: Initiative of the Sustainable Finance Platform, chaired by the Dutch Central Bank (DNB). SDG impact indicators: a guide for investors and companies. Pg. 8.

"comparability and aggregation of impacts," "harmonization of data requirements for reporting companies," and "consolidated reporting to stakeholders." [31] All of which the consortium views as crucial to increasing investments in and loans that contribute to the SDGs.

The Investment Leaders Group (ILG) of the Institute for Sustainability Leadership of the University of Cambridge similarly endorses and provides guidance for investors' determination of whether their non-financial impact aligns with the SDGs.

ILG condenses the 17 SDGs into six impact themes relevant to investors (see Box 1.3) and provides them with three progressive levels of metrics along which they can measure their impacts depending on things like data quality and availability: "Base," "Stretch," and "Ideal." "Base" measurement provides a quantitative measure of the impact on an asset (or fund) across its life cycle; "Stretch" is an enhanced measure to be implemented when the required data becomes available; and "Ideal" provides an enhanced measure allowing comparison of performance with the level required by the relevant SDGs.[32]

Box 1.3. Impact themes and their relationship to the SDGs



Source: Investment Leaders Group. In search of impact: Measuring the full value of capital. University of Cambridge Institute for Sustainability Leadership: 2016

For the theme of "decent work," for example, the Base metric is total number of direct jobs, adjusted for national rates of unemployment and vulnerable employment, per million dollars. The Stretch metric is total number of jobs, direct and contracted, with compensation above 60 percent of the national median wage, adjusted for national rates of unemployment and vulnerable employment, per million dollars. Finally, the Ideal metric is total number of jobs, direct and indirect (contracted workers and suppliers acting on behalf of the company or manufacturing its branded products, plus jobs sustained through products/services), in formal open-ended contracts with compensation above the living wage, adjusted for national rates of unemployment and vulnerable employment, per million dollars. Although the ILG framework does not assess influence, it emphasizes that "in a world of volatile environmental risks, resource scarcities and social inequalities impeding economic progress" investors must not only measure the social and environmental impacts of individual assets, but also determine whether they are contributing to solutions to the challenges outlined in the SDGs.

Measure influence: paradigm shifts. Measurement frameworks discussed thus far fundamentally rely on the concept of impact measurement—with its focus on the quantifiable, direct incremental change caused by investors' individual market transactions (portfolio-level activities)—and alignment, which is concerned with direct incremental changes caused by investor individual market transactions in alignment with, or in the context of, broader environmental, societal, or financial system goals.

Both approaches stop short of providing a way to measure investor influence on the long-term wealth-creating potential of the environment, society, and financial systems. While the concept of influence measurement builds off impact and alignment measurement, it also includes concepts that are more dynamic than what impact and alignment metrics are designed to capture. Accordingly, this report provides investors with a preliminary framework for measuring whether and how they can influence system-level indicators and characteristics, positively shifting paradigms and increasing the health and resilience of these systems.

The concept of influence is important because of the inherent complexity of most of the system-level considerations with which investors may contend. Influence can be thought of as extending along two separate but interrelated parameters: 1) influence in the achieving of measurable progress indicators of the output of the system, and 2) influence on the basic paradigms or characteristics of the system itself that determine these outputs.

System-level progress indicators are by design quantitatively measurable, although some are more difficult to measure than others, and are measured relative to goals. Paradigm shifts in characteristics are qualitative and are measured in terms that contrast the differing characteristics of two contrasting systems.

The difference between progress indicators and characteristics can be illustrated by comparing the "targets" and "indicators" of progress toward those targets that the United Nations has established as part of the metrics relating to its Sustainable Development Goals. Table 1.4 is derived from the Sustainable Development Goals Global Indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development. This framework identifies 244 indicators that relate to the 115 targets associated with the 17 SDGs. The indicators are quantifiable and measurable outputs that can indicate progress, or lack of it, toward the aspirational targets and goals of the SDGs. The 17 SDGs are system-level goals and, to achieve them, require paradigm shifts in current systems.

To illustrate this contrast, Table 1.4 lists examples of the targets and their indicators for the first four of the SDGs. Note that the indicators are quantitative, and the targets and their corresponding goals are qualitative and aspirational.

Table 1.4. Examples of Targets and Indicators for the Sustainable Development Goals 1-4

Targets	Indicators
Goal 1. End Poverty In All Its Forms Everywhere	
1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day	1.1.1. Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)
Goal 2. End Hunger, Achieve Food Security And Improved Nutrition And Promote Sustainable Agriculture	
2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round	2.1.1. Prevalence of undernourishment
2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)	
Goal 3. Ensure Healthy Live And, Promote Well-Being For All At All Ages	
2.1 By 2030, reduce the global maternal mortality ratio to less than 79 per 100,000 live births	3.1.1. Maternity mortality ratio
Goal 4. Ensure Inclusive And Equitable Quality Education And Promote Lifelong Learning Opportunities For All	
4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes	4.1.1. Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex

Source: United Nations General Assembly Resolution 71/313. "Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development" (New York: United Nations) July 6, 2017:4-8.

Indicators are important because their measurement can demonstrate progress, or lack thereof. Their achievement, however, depends on what this report refers to as "paradigm shifts" in characteristics of the systems themselves. These are typically qualitative changes in the functioning of the system—that is to say, of how the constituent elements of the system interact and consequently produce results of a certain relatively predictable nature. This report has adapted language from systems dynamics thinker Donella Meadows to describe four characteristics of environmental, societal and financial systems for which investors might seek influence. These four characteristics are adaptability, clarity, connectivity and directionality. Table 1.5 provides definitions of these terms.

Influence on characteristics. When it comes to attribution of causality in the creation of system-level paradigm shifts, it is often difficult to assign the impetus for such changes to a single factor or party with reasonable specificity. Large systems are complex and subject to multiple inputs from a wide variety of stakeholders. Attributing paradigm shifts to any single party is often difficult, if not impossible. The influence, however, of multiple parties in bringing about system-level changes is frequently apparent. For this reason, we talk here of investors maximizing and measuring their "potential for influence" upon, rather than directly creating, changes at these system levels.

Investors acting to exercise influence on the characteristics of a system seek to change the fundamentals of that system so that, operating under new paradigms, it not only produces a positive outcome for the particular challenge in question, but can also contend with similar challenges in the future. For example, in the case of climate change, the current challenge stems not simply from the fact that fossil fuels emit greenhouse gases, but from the fact that our economic system is so dependent globally on fossil fuels as its predominant source of energy that it cannot adjust rapidly enough to prevent climate change from occurring. It is this dependency on one predominant source of energy that is the fundamental aspect of the system that is at the heart of the climate-change challenge.

By changing the paradigm for energy production not simply to renewables, for example, but to a diverse set of fuel sources and ensuring the ability to monitor and manage their impacts at various system levels, investors can influence the larger system so that it will not simply replace our dependency on fossil fuels with dependency on another predominant source of energy—be that solar, wind, ocean, geothermal or some other—that may be the most cost effective at the moment, but may also turn out to have unanticipated system-level challenges of its own. Shifting the paradigm for energy production to a diversity of sources can create a system capable of adapting to unanticipated system-level challenges. Similarly, in the case of diversity: addressing the challenge of gender diversity at a system level may not be enough to create a system that has sufficient flexibility and understanding to accommodate racial, ethnic, class or other forms of diversity that have demonstrable significance in long-term value creation at a system level.

These shifts in characteristics will come about primarily through the activities of a wide variety of stakeholders and, in the case of investors, primarily through their collective efforts. For assessing the potential for effective influence at the level of systems' characteristics, therefore, one key to measurement is determining what thresholds of collaboration will be necessary to achieve inputs sufficiently strong to bring about change. The metrics proposed here are framed in the context of investors' use of the Tools of Intentionality. Although each of the tools ultimately has the potential to influence the full range of characteristics of systems, some are better suited to influence one characteristic more than the others. Examples of generic metrics for influence by type of system characteristic are outlined in Table 1.5 below. This report provides these examples for discussion purposes, as they are a preliminary attempt and will require refinement over time. Note that for each of these thresholds the report uses the phrase "substantial percentage of investors" to indicate a level sufficient to generate influence. We use this phrase with three different thresholds in mind:

►**At somewhere around 10% of involvement by investors**, we view their potential for influence as crossing a threshold for establishing the recognition and legitimacy for consideration of a system-level issue. Meant here is that if one out of ten of the largest, and therefore most prominent and influential, investors are using tools with the potential to bring about paradigm shifts in system-level characteristics, the concepts embedded in those tools and their use will gain a certain recognition and legitimacy within the investment and broader communities. In and of itself, this recognition does not guarantee influence, but it is sufficient to ensure the consideration of the issues among stakeholders at a system level.

►**At somewhere around one-third involvement by investors**, we view their potential for influence as crossing a threshold relating to a change in culture or generally accepted practice within the financial community and therefore considerably raising the prospects for system-level influence. Meant here is that if one out of three of the largest,

and therefore most prominent and influential, investors are using tools with the potential to bring about paradigm shifts, the concepts embedded in those tools and their use will become part of the overall culture of investments. At that point, investors' potential for influence at the system level will be augmented substantially, and in addition create a spill-over influence on other stakeholders in the system, including corporations, governmental bodies, civil society organizations and consumers. At this level, however, it will not yet be clear that the investment community fully is committed to the goals of system-level paradigm shifts.

Table 1.5. Indicators that Investors are Influencing the Characteristics of Systems

System Characteristic	Example Indicators that Investors are Influencing the Characteristics of Systems	
Adaptability	*Investors, corporations, and governments can adjust to shocks and major disruptions to <<system>> relating to <<system-level issue>>. This is due to the availability of a greater diversity of products, services, data, internal practices and external opportunities, which help the system balance efficient functioning with the ability to adapt to changing circumstances and external shocks (i.e., resilience).*	• A substantial percentage of investors are offering or investing in a variety of solutions to <<system-level issue>> related products across asset classes • A substantial percentage of investors have divested from a variety of asset classes where products, services, or processes perpetuate a variety of <<system-level issues>> • A substantial percentage of investors are implementing a diverse set of approaches to address <<system-level issue>> risks and opportunities • A substantial percentage of investors are using the full range of Tools of Intentionality to address the transition risks that are implicit in addressing <<system-level issue>> • A substantial percentage of investors increase the availability of and overall amount of funds invested in projects to address <<system-level issue>> • A substantial percentage of investors increase the availability and variety of investment opportunities to satisfy investor demand to invest in <<system-level issue>> • A substantial percentage of investors increase in availability and variety of venture capital dollars allocated to increasing the range of private-section options for addressing <system-level issue>>
Clarity	*Investors, corporations, and governments demand, collect, and regularly utilize information on <<system-level issue>> to make decisions; such information is increasingly coherent, abundant, accessible, reliable, and transparent, which helps stakeholders better understand their actions and interrelationships within the system to better avoid unintended harmful consequences.*	• A substantial percentage of investors support the disclosure of comparable, decision-ready data on <<system-level issue>> • A substantial percentage of investors are using such data on <<system-level issue>> across all asset classes to inform decisions • A substantial percentage of corporations and those in other asset classes offering investment opportunities provide such data on their performance related to <<system-level issue>>
Connectivity	*Investors, corporations, and governments establish and adhere to policies and practices that are beneficial to all stakeholders and to the system itself; the more these policies and practices are implemented the greater that benefit.*	• A substantial percentage of investors engage directly with corporations or those providing investment opportunities in other asset classes about <<system-level issue>> • A substantial percentage of investors collaborate to achieve positively self-reinforcing actions to address a variety of <<system-level issues>> that are beneficial to the health and resilience of <<system>> • A substantial percentage of investors are working collaboratively to address the risks of <<system-level issue>> in asset classes other than public equities—including fixed income, real estate, real assets, and private equity
Directionality	*Investors, corporations, and governments structure market incentives such that they encourage positive changes in each other's behavior and structures related to <<system-level issue>>; they align market structures with those of the of the system to support a desired goal and to increase the goal-directed, self-regulating characteristics of the system.*	• A substantial percentage of investors endorse public policy initiatives to address <<system-level issue>> • A substantial number of central banks have incorporated <<system-level issue>> considerations into their regulatory frameworks • A substantial percentage of investors have publicly committed to the importance of addressing <<system-level issue>> • A substantial percentage of investors have publicly committed to transitioning their activities toward opportunities that address <<system-level issue>> • A substantial percentage of venture capital firms are promoting <<solution to system-level issue>> as a viable investment sector

► **At somewhere around two-thirds involvement by investors**, we view their potential for influence as crossing a threshold relating to the full realization of the potential for influence. By this we mean that if two out of three of the largest, and therefore most prominent and influential, investors are using tools with the potential to bring about paradigm shifts in system-level characteristics, they will have a realistic potential to exercise influence.

We also have in mind parameters defining the term "largest investors."

► **Since the world of investors is broadly diversified by type**, many types of investors—pension funds, sovereign wealth funds, endowments, financial services companies, mutual fund and private-wealth management firms, among others—will need to be represented if the investment community collectively is to realize its full potential for influence.

► **Since investments take place over a wide variety of asset classes**—public equities, private equity, fixed income, real estate, real assets among others—funds managed across most of the major asset classes will also need to be represented.

► **The term "largest" incorporates** both the concept of the largest by assets under management of each type of investor and the concept of total assets under management for each asset class.

► **When these three parameters are combined**, we end up including largest investors for most asset classes as well as many of the largest of each type of investor.

The metrics proposed here for assessing investors' potential for influencing system-level paradigm shifts have a number of implications. First, because investors as a whole need to make substantial commitments to key activities related to a given system before they can be said to have the potential for influence, creating that potential will take time and is likely to be fully realized in a relatively limited number of cases. Simply because the collective effort required is substantial, however, does not mean that investors' efforts are unimportant in bringing about change. Changes in the complex systems within which our global, interconnected society now operates require substantial inputs from multiple key stakeholders—and the investment community is a major such stakeholder and exercises strong influence already, in many crucial systems.

Second, the task of measuring system-level paradigm shifts falls most logically to civil society and national and international organizations, along with the natural and social science communities, rather than to investors either individually or collectively. Investors can, for example, reasonably rely on these parties to measure and report on progress on GHG atmospheric concentrations or progress in the overall equal treatment of, and opportunities for, women, racial or ethnic minorities, rather than undertake the task of monitoring and measuring metrics such as these themselves. Measurement of paradigm shifts in systems' characteristics is less well developed, but systems-dynamics experts, scientists and regulators are best suited for the tasks of scenario building and stress testing that are inevitably part of such assessments.

What investors can reasonably measure and monitor is their progress, individually and collectively, in increasing their potential for influencing the overall characteristics and progress indicators in relation to systems-level challenges.

The difference between measurement of the "impact" of holdings in a portfolio, as discussed earlier, and the measurement of the potential "influence" of investors' overall policies and practices at a system level is that the former may be aligned with the goals of the SDGs (e.g., eradicating poverty) but typically does not measure its impact relative to a system-level progress indicator (e.g., percentage of the population still below the poverty level).

Instead it reports on what its portfolio "alignment" is with the goal (e.g., number of jobs created for the homeless). Investors committing their firms as a whole through a variety of policies and practices—and working collaboratively with like-minded investors—can measure their potential for influencing shifts in systems' paradigms (e.g., toward a system that generates no extreme poverty) by establishing the legitimacy for their concerns, creating cultural change among their peers, and using the full weight of the field building, investment enhancement, and opportunity generation activities they have collaboratively created as an input into the system in question.

2. The Roadmap: Practical Applications

To help facilitate investors' use of the roadmap, this section outlines how investors or third-party evaluators can use the guidance to assess the effectiveness of actions targeted at addressing the system-level challenge of climate change.

We have chosen climate change because it is currently the best example of a system-level challenge on which institutional investors globally are currently taking action.

STEP 1: ASSESS FOCUS ON CLIMATE CHANGE; ESTABLISH MEASURABLE GOALS FOR GENERATING SYSTEM-LEVEL INFLUENCE

Assess the appropriateness of climate change as an issue for integration into investment strategies. The United Nations has highlighted climate change as an issue that affects all aspects of life globally and for which meaningful action is possible (SDG Goal 13: Climate Action): "Climate change is now affecting every country on every continent. It is disrupting national economies and affecting lives, costing people, communities and countries dearly today and even more tomorrow… Affordable, scalable solutions are now available to enable countries to leapfrog to cleaner, more resilient economies."[33]

Table 2.1 maps the appropriateness of climate change for integration into investment strategies against the four criteria of consensus, relevance, effectiveness and uncertainty.

Table 2.1. Assessing Climate Change as an Issue Relevant for Integration into Investment Strategies

Consensus About the Issue's Importance	Broad consensus exists as to the destabilizing risks of climate change and that human activity contributes to that change. The International Panel on Climate Change (IPCC)—an authoritative source of scientific opinion on the significance of climate change—documents in its Fifth Assessment Report of the Intergovernmental Panel on Climate Change the consensus within the global scientific community that climate change is underway, is caused by human activities and causes disruptive system-level risks. [34]
Relevance to Investors	Left unaddressed, climate change can cause economic harm worldwide likely to affect investors' portfolios across all asset classes. Investors globally have formed coalitions such as Climate Action 100+ to address and contend with these risks.
Potential for Investors to Effectively Influence the Issue	Investors, along with corporations, governments and civil society organizations, can take effective action to contribute to adaptation and mitigation that will lessen the risks of climate change. Calls for $1 trillion or more in annual investments in clean technologies in order to keep global temperature rises under two degrees Celsius have emphasized the importance of institutional investors' contributions.
Uncertainty about Potential Outcomes	The greater the likelihood of system-level disruptions in the climate, the greater the uncertainties about climate change's potential impacts on the economy and hence on all investors. Use of scenarios, as suggested by the Task Force on Climate-Related Financial Disclosures, represents one means of reducing somewhat the necessarily intractable uncertainties involved.

Sources: Steve Lydenberg. Systems-Level Considerations and the Long-Term Investor: Definitions, Examples, and Actions. The Investment Integration Project. 2017. Intergovernmental Panel on Climate Change (No date). Climate Change 2014: Impacts, Adaptations and Vulnerability, Summary for Policymakers. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. (Geneva, Switzerland: Intergovernmental Panel on Climate Change). University of Cambridge Institute for Sustainability Leadership. Unhedgeable risk How climate change sentiment impacts investment.

Set measurable influence goals for climate change. When setting measurable goals for influencing the system-level challenge of climate change, investors also determine what type of influence they aim to achieve with respect to system-level progress indicators and characteristics of the system itself.

Widely accepted progress indicators that investors can reasonably adopt exist for goals such as global reductions in greenhouse gas emissions or reductions of carbon dioxide concentrations in the atmosphere.

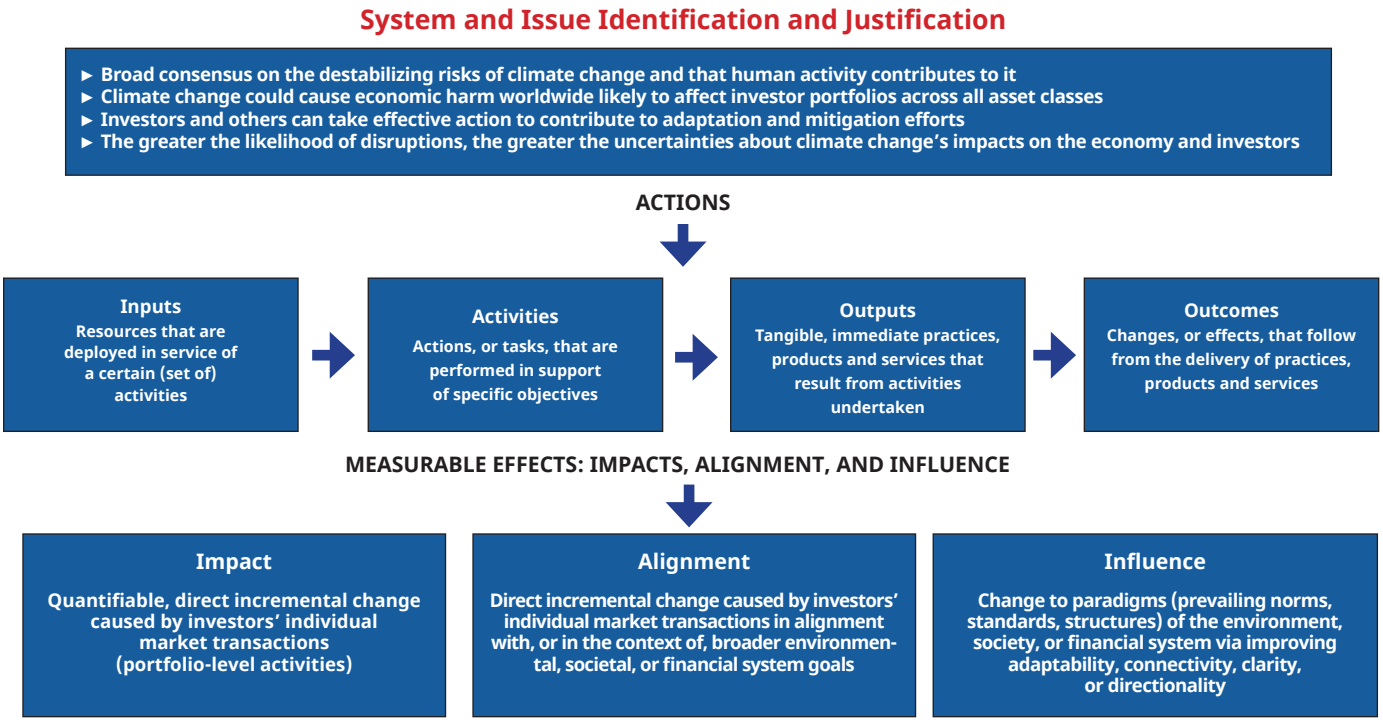
Table 2.2 provides examples of goals that investors might reasonably adopt for shifts in the characteristics of the current global energy-production system with its over-dependency on fossil fuels worldwide.

Table 2.2. Examples of Goals For Paradigm Shifts in the Characteristics of the Global Energy-Production System

Adaptability	Increased ability of the energy production system to adjust to the shocks and major disruptions of climate change via greater diversity of renewable energy sources
Clarity	Improved coherence, flow, access to, and transparency of information on the energy production system's effects on environmental systems generally and specifically on the atmosphere, oceans and fresh water, and arable land
Connectivity	Increased availability and diversity of renewable energy-related investment products and services that when used by one part of the system increase their likelihood of their use in other parts
Directionality	Reformed market incentives (e.g., subsidies and tax breaks) that align the behavior of stakeholders in the energy-production system (e.g., investors and corporations) with the goal of increased development of a variety of renewable energy sources

To ensure that their goals aspire to generate system-level influence, and that they do not focus solely on the more narrow portfolio-level impact or alignment, investors might generate a logic model like the one outlined in Figure 2.1 below.

Figure 2.1. Example Logic Model for Outlining Climate Change Influence Goals



STEP 2: ASSESS THE POTENTIAL EFFECTIVENESS OF TOOLS TO ACHIEVE SYSTEM-LEVEL INFLUENCE

Investors can implement the Tools of Intentionality in various ways to improve systems' adaptability, clarity, connectivity and directionality and to achieve their system-level climate change progress indicators.

Assess tools' effectiveness in achieving influence toward climate-change goals. Below we describe some of the many ways that each tool can be used to generate influence related to climate change, provide select examples of investors that already use each to address the issue, and provide a summary of the conclusions investors or third-party evaluators might reach on the measurable influence that use of the tools might generate. Some tools can have multiple uses and can overlap as to whom they influence (e.g., investors, corporations or governments) and how they influence the climate system generally (e.g., increased adaptability, clarity, connectivity or directionality). Investors currently employ certain tools (e.g., Self-Organization and Interconnectedness) more frequently than others (e.g., Utility and Locality) to address climate change.

The tools are grouped by three types of general uses: field building (e.g., Interconnectedness, Self-organization, and Polity), investment enhancement (e.g., Solutions, Standards Setting, Diversity of Approach), and opportunity generation (e.g., Additionality, Evaluation, Locality, Utility). For each of these, as well as for each individual tool, measurement of the potential to generate (1) legitimacy for the issue addressed by the tool; (2) cultural change within the financial industry with spillover effects into other system stakeholders including corporations, governments, civil society organizations and consumers; and (3) the full realization of their potential for influence within the system will depend on the level of their collective uptake across asset classes by the largest members of the investment community.

► FIELD BUILDING

Self-Organization: Creating and Supporting Organizations that Can Act Collectively on Climate

In action. In a competitive industry where investors are not typically accustomed to working together toward shared goals, building organizations that can pool resources and increase the potential for system-level influence is a logical first step for issues of the complexity of climate change.

Self-organization can help investors work toward a wide variety of goals, including data transparency, corporate engagement, and political influence, among others. Investors have formed a number of umbrella organizations such as the Principles for Responsible Investment and the various Social Investment Forums around the world through which they can address a range of challenges including climate change, but other investor-based organizations that specifically target climate change are also being formed.

Existing Uses:

►In 2017, Global Investor Coalition on Climate Change (GICCC). GICCC consists of the Investor Network on Climate Risk, (founded in 2004, now with 130 members, primarily U.S.), the Institutional Investors Group on Climate Change (founded in 2006, now with 140 members, primarily European), the Investor Group on Climate Change (Australian and New Zealand investors, plus others active in the region, with approximately $2 trillion in assets under management) and the Asian Investor Group on Climate Change. In late 2017 GICCC announced the launch of Climate Action 100+, a five-year project committed to collaboratively engage the world's largest corporate greenhouse gas emitters on behalf of many of the world's largest institutional investors. On the Climate Action 100+'s steering committee are the institutional asset owners California Public Employees Retirement System, Ircantec, and AustralianSuper and the institutional asset manager HSBC Global Asset Management. [35]

►The Climate Solutions Collaborative (CSC) is a partnership of Confluence Philanthropy (representing foundations) and CREO (representing family offices), launched in 2016 to support asset owners seeking climate-friendly investments. CSC operates a Re-investment Institute, participants in which had invested $13 billion in such investments as of 2017. Among investors supporting the organization are the Surdna Foundation and Pegasus Capital Advisors. [36]

Potential for Measurable Influence. Because Self-Organization can help overcome free-rider problems, collective action dilemmas and situations involving the tragedy of the commons, it is particularly important in increasing connectivity and directionality at the system level. The potential for influence exemplified by collective actions that self-organization enables can be seen in the increasing of the investment community's ability to work toward shared goals that benefit all (connectivity) and contribute to the overall goals (directionality).

Because a considerable portion of the largest investors in the world is currently committed to organizations addressing climate change, increased connectivity and directionality among investors are emerging and have the potential to influence other key components of the system—corporations in particular, and governments as well.

Interconnectedness: Providing Useful Data, Analysis, and Debate on Climate Change

In action. Using Interconnectedness, investors launch and lead initiatives to create a common shared base of mutually beneficial knowledge (e.g., data, analysis and debate) on climate change and the transition to a low-carbon economy. These data provide an essential foundation for effective actions by investors that, the more they are taken up individually, the greater good they produce for all.

Organizations outside the investment community that provide such data include: the *Union of Concerned Scientists*, with its study *The rise in global atmospheric CO2, surface temperature, and sea level from emissions traced to major carbon producers*;[37] and the Global Carbon Project, a global partnership of scientists providing a portrait of the complete carbon cycle, its dynamics and strategies for its management.[38] Many in the investment community have also supported organizations developing climate-related data specifically tailored to their needs.

Existing Uses:

►Task Force on Climate-Related Financial Disclosures is a global initiative encouraging "voluntary, consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers, and other stakeholders."[39] Instrumental in its launch in 2015 was the Bank of England under the leadership of Mark Carney in his role as Chair of the Financial Stability Board and Michael Bloomberg of the private financial information provider Bloomberg Finance. Among its Vice Chairs were representatives from the French insurance company AXA and the Brazilian financial services firm Bradesco. Many asset owners and managers endorsed its recommendations.[40]

►Investors and financial services firms support CDP (formerly the Carbon Disclosure Project), which provides data on greenhouse gas emission of corporations and governmental bodies, as well as other environmental information. Its boards include representatives from the consultant Mercer's Global Responsible Investment Business unit (Mercer is subsidiary of the financial services firm Marsh & McLennan, Inc.); the UK Green Investment Group; the investment management firm Churches, Charities and Local Authorities and the Chair of the UK Financial Services Authority governmental regulatory body.

►The Energy Transition Risk and Opportunities project has a toolbox consisting of databases with total estimated projected carbon emissions for companies in six key industries; two climate-change reference scenarios with associated risk indicators for integration into financial models; four risk models, specific to company risks, equity valuations, credit risk; and portfolio climate alignment analysis. Several financial services organizations are collaborators in this project, including the Paris-based 2˚ Investment Initiative consulting firm, S&P Global, the European brokerage firm Kepler Chevreux, the Institute for Climate Economics (a think tank co-sponsored by the French pension fund Caisse de Dépôts), and the Germany-based consultants The CO-Firm, as well as Carbon Tracker and the Sustainable Finance Programme at the University of Oxford Smith School.

Potential for measurable influence. Interconnectedness can help create a system in which increased information flows prompt individual actions that strengthen the system, making it important in increasing both clarity and directionality. The increase for the potential for influence brought by in-

creasing the reliability of clear, decision-ready data (clarity) and the alignment of investors who then rely on this mutually recognized date (directionality) will be helpful in creating a paradigm shift in the lens through which investors assess climate risks and opportunities.

As Task Force on Climate-Related Financial Disclosure and CDP climate-related data suggest, investors are considerably interested in building a shared base of data on greenhouse gas emissions. The increasing availability of data and endorsements of its expansion in scope and quality indicate that a paradigm shift is underway.

Polity: Encouraging Public Policy that Helps Facilitate the Reduction of Greenhouse Gas Emissions

In action. Regulations, tax incentives, subsidies and other public policy initiatives can shift the directionality of the environmental system away from fossil fuels and enhance the overall clarity of information about incentives for investors and corporations to readjust their policies and practices. Because the risks and unpredictability of climate change and its effects have the potential to impact the performance of virtually all asset classes, investors are increasingly encouraging such public policies.

Existing Uses:

►In September 2014, in the lead-up to the COP 21 negotiations in Paris, in the Global Investors Statement on Climate Change, 409 institutional investors from around the world representing $24 trillion in assets encouraged governments to adopt a broad range of climate-related policies and regulation (e.g., setting price on carbon emissions; supporting energy efficiency and renewable energy; phasing out subsidies for fossil fuels; and financing clean energy research). [41] The statement explicitly noted that "stronger political leadership and more ambitious policies are needed in order for us to scale up our investments."[42]

►In July 2016, a coalition of more than 40 investors with assets under management totaling $1.15 trillion wrote to the U.S. Securities and Exchange Commission (SEC), urging it to increase its efforts to ensure better corporate compliance with its 2010 guidance on material climate-related risks disclosure by corporations. [43]

►People's Bank of China, in its role as a financial regulator, has taken multiple steps to encourage the development of a "green finance" infrastructure in China. The Bank of England has highlighted the risks to the financial system and insurance industry of climate change, taken a leadership role in the Financial Stability Board's call for increased climate-risk disclosure by corporations and investors, and promoted dialogue on the risks of climate change within the financial community. [44]

Potential for measurable influence. Polity can be useful in establishing clarity about how to align the actions of investors and corporations with the goals of a system that prioritizes renewable energy sources (directionality) when investors encourage public policies that support that shift in alignment. This is especially true when the broader investment community views such support as productive and shares a commitment to endorsing laws and regulations that can help in shifting society's paradigm from dependency on fossil fuels as the single dominant source of energy generation to renewables.

Governments worldwide are taking initial steps to develop public policy initiatives to support the mitigation of and adaptation to climate risks and to facilitate a paradigm shift away from fossil fuels—with the notable exception of the United States, where progress is nevertheless being made in such influential states as California.

►INVESTMENT ENHANCEMENT

Solutions: Creating Investment Funds That Target Solutions to Climate Change

In action. With estimates running at $1 trillion per year necessary for investments in alternatives to fossil fuels to minimize the worst of climate change's impacts, it is crucial that investors demonstrate market demand for such products and allocate assets to them. [45] Taking the intentional step of creating "solutions-specific" funds can send a signal to energy providers powerful enough to create a flexible set of climate-related solutions that enhance the adaptability of the system as a whole. Solutions-oriented investments demonstrate

not only how investors can profit from the challenges of climate change, but how they can solve them.

Existing Uses:

►In 2017, the world's largest money management firm, BlackRock, raised $1.4 billion for its Renewable Income UK fund—reportedly the largest single renewables fund ever raised. In 2016, it raised $724 million for a Renewable Income Europe fund. More generally, a rapidly growing number of private equity firms such as New Energy Capital and Mainstream Renewable Power, among others, specialize in investments in renewable-energy generation projects. [46]

►As of July 2017, for the first time since 2008, private funds raised for renewables outpaced those exclusively for conventional power. As of that date, private investment funds had raised $4.8 billion for investments solely in renewables, as compared with $1.9 billion for conventional power infrastructure. An additional $19 billion had been raised in the first half of 2017 by private funds for investments in a combination of renewables and conventional energy projects. [47]

►Public equity managers are offering an increasing array of products oriented toward climate-change solutions including renewables. Among these are Generation Asset Management's Climate Solutions Fund and Boston Common Asset Management's U.S. and International Sustainable Climate Equity Funds.

►Asset owners are also allocating funds to climate-change solutions. The Dutch pension fund manager PGGM, for example, has included climate as one of the four solutions targets (along with food security, healthcare and water scarcity) for an allocation of what will ultimately be at least €20 billion (US$23.3 billion) by 2020. In 2014, the University of California's endowment announced that it would set aside $1 billion for investments in solutions to climate change.

►Green bonds, many of which fund climate-related mitigation and adaptation projects, have become an increasingly popular option among institutional investors, with estimates of the size of the green bond market running at approximately $200 billion in 2017. [48]

Potential for measurable influence. The Solutions tool helps investors build a solid foundation of long-term investment opportunities while simultaneously increasing the adaptability of the system to respond to the climate change crisis. Such investments can shift the paradigm from an inflexible dependence on fossil fuels to a more adaptable system of diverse renewable energy sources.

Standards Setting: Establishing Criteria for Investments that Pose Climate Risks

In action. Clear statements of norms and standards when it comes to investments related to greenhouse gas emissions are necessary if there is to be a paradigm shift in investment practice and business norms. Although divesting from the owners of coal, oil and natural gas assets is controversial in terms of traditional asset management, it makes a clear statement about the needed directionality of the system. When broadly publicized, these statements promote debate on the significance of climate change, keep the issue in the public eye, remind key decision-makers about the urgency to act and ultimately can help to shift public opinion on the issue.

Existing Uses:

►In November 2017, Norges Bank Investment Management, the asset manager for Norway's $1 trillion sovereign wealth fund, announced that it was considering divesting from oil-company stocks.[49] It had previously divested from coal companies.[50]

►The Rockefeller Brothers Fund announced in 2014 that it would divest from fossil fuel companies starting with companies involved in coal mining and Canadian tar sands. Because of the connection of the Rockefeller fortune with the oil industry, this decision received considerable public attention. Similarly, the Church Commissioners for England have a policy of not investing in thermal coal firms. [51]

► In January 2018, New York City announced plans to divest its pension fund from fossil fuel companies. [52]

Potential for measurable influence. Standard Setting can send a clear message about the need to align climate-related actions with system-level goals, and thus can influence the directionality of the system.

The decisions to consider divestment from fossil fuel companies by the high-profile investor Norges Bank and others are influential in keeping the question of appropriateness of investments in fossil fuels in the public eye. Similarly, growing direct engagement by investors worldwide with the largest corporate greenhouse gas emitters keeps this issue on the radar of corporate management, utilities and their regulators, and the investment community as a whole. Through public debate, these initiatives encourage gradual realignment of practice and a shift in the perspective and alignment of both investors and corporations.

Diversity of Approach: Adopting Multiple Investment Approaches to Addressing Climate Challenge

In action. By targeting multiple strategies to address climate-change risks and opportunities, asset owners can increase the potential effectiveness of their actions. By including climate change among multiple responsible-investment-related offerings, asset managers can capture the full range of clients wishing to address the issue. Doing the above signals that the investment community and its stakeholders are increasingly aligned to address climate change. Given the complexity of the current fossil-fuel-dependent economic system and its relationship to the global environment, a focus on multiple approaches and a maximum mobilization of concerned investors are likely to be necessary to achieve paradigm shifts.

Existing Uses:

► In October 2016, the New Zealand Superannuation Fund announced that it would substantially shift policies toward low-carbon investments. It set a goal of reducing its exposure to carbon reserves by 40% and to reduce the carbon intensity of its holdings across all asset classes by 20% by 2020. At the same time, it also pledged to increase its investments in "alternative energy, energy efficiency and transformational infrastructure."[53] In August 2017, it shifted NZ$950 away from companies with high carbon emissions in its passive equity portfolios. [54]

► In 2012, Morgan Stanley launched its Investing with Impact Platform for its wealth management clients. It set a target of US$10 billion invested through the platform by 2018. Clients, including those concerned with climate change, can develop an individualized investment approach, but Morgan Stanley aligns all investments with one of four themes that it categorizes as values alignment, ESG integration, thematic exposure and impact investing.[55]

Potential for measurable influence. Through their use of Diversity of Approach, investors signal that alignment of fundamental investment practices with the goals of a climate-related paradigm shift is essential, representing a new directionality for the financial community. They also acknowledge that the complexity of climate-related risks demands multiple approaches to increase the adaptability to its varied challenges.

The current trend among money managers, large and small, to serve investors with sustainability concerns including those seeking a shift to a low-carbon economy, appears to be increasingly widespread. The recent decision by a financial institution as prominent as ABN-AMRO, for example, to incorporate sustainability considerations, presumably including those relating to climate change, for all new investment clients holds the promise of an emerging paradigm shift among financial services companies. In general, the new norm in the financial community is increasingly to offer such options.

► OPPORTUNITY GENERATION

Additionality: Ensuring that Developing Countries Can Transition to a Low-Carbon Economy

In action. Using Additionality, investors support developing countries (disproportionately exposed to cli-

mate risk) in the shift to reliance on renewable energy and adapting to the effects of climate change—which they often lack the resources to do alone—as is currently most commonly done by multilateral development financial institutions. [56]

Existing Uses:

►Multilateral development banks including the African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, Inter-American Development Bank, and World Bank Group (including the International Finance Corporation) support the $8.3 billion Climate Investment Funds, which include a Clean Technology Fund and a Scaling Up Renewable Energy in Low Income Countries Program that are dedicated to helping low-carbon-emissions energy programs and climate-resilient infrastructures in 72 developing countries. [57]

►Bridges Fund Management's mission to serve underserved communities includes making investments to improve the environmental sustainability of, and decrease carbon emissions (renewable energy) from, buildings in the U.K. and the U.S.

Potential for measurable influence. Additionality can help the least developed nations adapt to the risks of climate change and increase their ability to capitalize on opportunities to build a low carbon economy (adaptability). Financing from both the private and public sector can help to promote the stability of these nations and their resilience to climate change, as well as their ability to benefit from economic growth based on models with minimal reliance on fossil fuels.

Locality: Addressing the Implications of Local and Regional Transitions away from Fossil Fuels in Support of Broader Global Paradigm Shifts

In action. Because transitions to a renewable energy economy necessarily play out at local or regional levels, they will inevitably impact, either positively or negatively, regional dynamics, trends, and opportunities. Resistance to this transition can be strong without local adaptability to a shift away from fossil fuels unless the negative impacts of these investments are minimized and their potential for positive impact is maximized. As Nick Robins, writing in *ESG Magazine*, has pointed out, "investors have yet to appreciate the potentially negative implications for workers and communities [that are] dependent on high-carbon industries: in effect, the risk of stranded employees and stranded communities." These local transitional risks require "a place-based approach to climate investing."[58] Implicit in the need to address complex local dynamics disrupted by such a paradigm shift is connectivity among investments within a given region to better facilitate adaptation to this change.

Existing Uses:

►In a 2017 study for the Organization for Economic Co-operation and Development (OECD), the Just Transition Centre, a project of the International Trade Union Confederation, recommended the development of a set of Shareholder Resolution Principles that could be adopted by investors concerned with transitional challenges taking place at local levels. The study also recommended that the Task Force on Climate-Related Financial Disclosures should be expanded to include "just transition plans for vulnerable workers and communities." [59]

►The Just Transition Fund partners with philanthropies to help local communities and regions in the United States adapt to employment and business challenges posed by the transition away from fossil-fuel dependency, but also has an Impact Investing Initiative that connects impact investors "to new opportunities with promise for large-scale economic impact and job creation in coal-impacted communities."[60]

►In 2016, CalPERS took a 25% ownership position in a solar-energy project based in California that is supplying energy to the local market. [61]

Potential for measurable influence. Renewable energy might provide opportunities for stable, long-term wealth generation within local contexts in the long run. In the short term, however, climate change related dislocations can be substantial; the ability of localities and regions to adapt to them is only possible through

a regionally interconnected and mutually supportive program of investments (connectivity). Pursuit of balanced and stable local economic systems is increasingly compelling in today's complex world where regional instabilities can cause global disruptions.

Evaluations: Incorporating the Concept of Natural Capital into Investment Analyses, Policies, and Practices

In action. Investors that embed the difficult-to-value concept of natural capital into their analyses, policies, and practices across all asset classes, signal a long-term commitment to the preservation of the stability of the climate and other natural resources on which they depend. Incorporation of the concept into their belief statements enshrines this approach as fundamental to their practice for the foreseeable future.

Existing Uses:

►The California Public Employees Retirement System (CalPERS) includes in its investment belief statement reference to "physical capital"—in addition to "human capital" and "financial capital"— as a vital resource for the environment's health and therefore an important consideration in its investment management.[62]

►The Australian Construction and Buildings Unions Superannuation fund signals the importance to its investment goals of various capitals throughout its 2016 Annual Integrated Report, including natural capital, along with financial capital, manufactured capital, human capital, intellectual capital, and social and relationship capital. [63]

Potential for measurable influence. Investor use of Evaluations can change the directionality of a system; integrating the concept of natural capital into fundamental investment beliefs, analysis, policies, and practices can help to embed the concept of the preservation of natural capital—with its implications for the assessment of the value of a shift away from current fossil-fuel dependency to preserve the stability of the climate—within the fundamental beliefs of the investment community.

The commitment of CalPERS to the concept of physical capital—and by implication to the preservation of natural capital—has the potential to be influential within the investment community. Moreover, the general interest of investors in alignment with the SDGs is likely to prompt increased awareness of the issue.

Utility: Promoting the Use of The Asset Class Best Design To Create Paradigm Shifts on Greenhouse Gas Emissions

In action. A wide range of technologically innovative renewable energy technologies will increase the adaptability of the system to the transition to renewable-energy. Venture capital is by design the asset class best suited to generating the disruptive technological innovation capable of catalyzing this kind of technologically driven paradigm shift. Investors might therefore pursue venture capital funds to provide leadership in addressing climate change.

Existing Uses:

►Venture capital funds typically target sectors with higher potential returns than renewables—primarily technology and drug companies. For example, in 2015 out of $63.3 billion of venture capital investments, $28.1 billion went to internet companies, $21.8 billion to software startups, $6.6 billion to biotechnology firms, and $4.7 billion to pharmaceutical companies, while renewables were not even on the list of the ten top sections receiving funding.[64] From 2006 to 2011, however, clean technology was among the sectors favored by the venture capital industry, with investments hitting $4.3 billion, or 16.8% of overall allocations. By 2016, cleantech accounted for only 7.6% of total funding and venture capital firms had lost, by one account, approximately 50% of the total of $25 billion they had invested between 2006 and 2011. According to the 2017 study *Clean Tech 3.0: Venture Capital Investing in Early Stage Clean Energy, A Changing Investment Climate* by representatives of Ceres and the Clean Energy Venture Fund, the venture capital market for clean technology firms has recently rebounded with $2.3 billion in new investments in the first quarter of that year. [65]

Potential for measurable influence. Aligning investor focus on climate change with the unique societal func-

tions of individual asset classes can enhance their influence. Venture capital provides one such opportunity given its inherent bias to disruptive technological innovation that can enhance the adaptability of the system.

Assess whether implementation of selected tools is effective in leading to collaborative action. Before measuring whether their use of the Tools of Intentionality is helping them to positively influence climate change, investors can assess whether they are effectively using the tools and to ensure that they are acting in support of positive system-level paradigm shifts rather than in conflict with them. That is, they can answer the basic question of whether they are effectively using the Tools of Intentionality to produce collaborative action that could lead to system-level paradigm shifts, and whether they are acting in support of such shifts rather than in conflict with them.

Examples of such indicators specific to climate change are outlined in Table 2.3 below. The examples are not exhaustive, but rather are suggestive and intended to help investors and evaluators assess and measure the effectiveness of their implementation of their system-level investment strategies and begin to think about how they might assess their use of the Tools of Intentionality to encourage a global paradigm for energy consumption from fossil fuels to renewable energy sources.

Table 2.3. Indicators that Investors are Effectively Using the Tools of Intentionality in Support of a Paradigm Shift away from Fossil Fuels and Toward Renewable Energy Sources

	Tool	Example Criteria for Assessing Implementation Effectiveness
Field Building	Self-Organization	☑Launched, led, or actively participated in an organization that increased the capacity of the financial community <<in this way>> to address climate change through <<activity>> ☑Launched, led, or actively participated in an organization that encouraged <<corporation(s)>> <<in this way>> to respond to concerns about climate change through <<activity>> ☑Launched, led, or actively participated in an organization that encouraged <<government or regulatory body>> to establish policy that facilitates increased or improved investments in solutions to climate change or that discourages investments that perpetuate climate change
	Interconnectedness	☑Created or helped to create a resource of academic and other studies documenting approaches to the valuation of ecosystem services and natural capital; Helped investors (<<specify>>) gather, analyze, or incorporate into their investment analysis data on climate risk ☑Encouraged <<corporations>> from <<industry>> to disclose reliable data on performance related to greenhouse gas emissions
	Polity	Led efforts that encouraged <<government or regulatory body>> to establish policy that facilitates increased or improved investments in solutions to climate change or that discourages investments that perpetuate climate change
Investment Enhancement	Solutions	Developed and/or invested in funds to solve, not simply profit-from, climate change challenges
	Standard Setting	☑Led or otherwise participated in the development of standards for investments in <<industry>> based on widely accepted norms related to climate change that discourage investments that violate those norms and encourage investments that support meet agreed-upon criteria for positive practice to be used by <<investors>> ☑Set standards for investments in <<industry>> based on widely accepted norms related to climate change that discourage investments that violate those norms and encourage investments that support meet agreed-upon criteria for positive practice
	Diversity of Approach	Targeted multiple strategies to address climate change risks and opportunities including <<specify>>; provided clients with a range of products and approaches <<such as>> for investing to address their climate change concerns
Opportunity Generation	Additionality	☑Invested in climate change adaptation and/or renewable energy projects in <<developing country>> ☑Led efforts to encourage <<government or regulatory body>> to facilitate climate change mitigation and adaptation investments in underserved communities
	Locality	☑Helped investors (<<specify>>) cultivate a deep understanding of the risks and opportunities of climate change for <<geographic area>> ☑Invested in securities such as green bonds or corporations focused on promoting <<geographic area's>> adaptation to and mitigation of climate change
	Evaluations	☑Incorporated natural capital assessments in investment analysis; developed an approach to doing so that can be used by other investors ☑Required that <<corporations>> from <<industry>> provide data on natural capital performance; encouraged them to incorporate such information into their business models.
	Utility	Invested in venture capital and private equity investments with a renewable energy focus

STEP 3: MEASURE INFLUENCE ON CLIMATE CHANGE-RELATED PARADIGM SHIFTS

Investors can measure their progress toward the goal of shifting the global paradigm for energy consumption from fossil fuels to renewable energy sources. That is, they can measure whether they are positively changing the adaptability, clarity, connectivity, and directionality of the environment, society, and financial system in support of a paradigm shift away from fossil fuels and toward renewable energy sources. In assessing their progress against these indicators, investors answer the more complex question of whether they are achieving their overarching influence goal of a paradigm for energy consumption from fossil fuels to renewable energy sources. That is, whether their influence on system characteristics contributed to positively shifting paradigms (prevailing norms, standards, and structures) around energy production and consumption. Examples of such indicators specific to climate change by system characteristic are outlined in Table 2.4 below. These examples are suggestive and not at all exhaustive. The table also includes real world examples of indications that climate change-related paradigm shifts are currently underway.

Table 2.4. Indicators that Investors are Positively Changing Characteristics of Environment, Society, and Financial System in Support of a Paradigm Shift away from Fossil Fuels and Toward Renewable Energy

System Characteristic	Example Indicators that Investors are Influencing the Characteristics of Systems		Real World Examples of Such Shifts in Action
Adaptability	*The global economy can adjust to shocks and major disruptions to the environmental system given decreased dependence on fossil fuels and increased availability of and dependence on a range of renewable energy sources.*	►A substantial percentage of investors increasingly supply and demand climate change solutions-oriented funds ►A substantial percentage of investors invest in a diverse range of renewable energy technologies across all asset classes ►Venture capitalists are investing in a broad spectrum of renewable energy technologies and strategies ►Investors understand and are using the full range of the Tools of Intentionality (e.g., Polity and Solutions) to address the transition risks in a shift from fossil fuels to renewables	A recent report by Ceres and the Clean Energy Venture Group indicates that a shift toward increased investment opportunities in clean technologies, including renewable energy, may be underway.
Clarity	*Data and analysis are adequate for understanding the risks of the global economy's dependency on fossil fuels and the rewards of a shift to renewable energy, representing a major increase in clarity about the nature and urgency of the climate change crisis.*	►A substantial percentage of investors support increased disclosure of climate-risk data through organizations such as CDP, Task Force on Climate-Related Financial Disclosure, the Global Reporting Initiative, Sustainability Accounting Standards Board, Reporting 3.0, International Integrated Reporting Council, and Sustainable Stock Exchanges ►Data is increasingly available to help investors identify the industries and companies that pose the greatest climate-change risks ►A substantial percentage of investors incorporate climate-risk data in development of investment policies and practices across asset classes and collaborate with peers to address the sources of greenhouse gas emissions and the challenges of a transition away from fossil fuel dependency ►Scientific analysis increasingly refines stakeholders' ability to understand the consequences of increased concentrations of greenhouse gases (e.g., extreme weather events including floods, droughts and storms; rising sea levels; acidification of the oceans; regional fresh water shortages; and the decline in the availability of arable land) and related challenges (e.g., mass migration of populations (so-called "climate change refugees") and disruptions to global food sources and access to fresh water)	Uptake by corporations, financial institutions and investors of the recommendations of the Task Force on Climate-Related Financial Disclosure indicates that the availability of such data is becoming broadly recognized as a baseline standard in the investment and corporate communities.
Connectivity	*Investors, corporations, and governments establish and adhere to climate change policies and practices that are beneficial to all stakeholders and to the system itself. Investors shift away from competitive, siloed, and specialized behavior toward collective action to address climate change as a community and for the benefit of the community.*	►Investors are collaborating globally to engage corporations on the importance of reducing their greenhouse gas emissions, thus shifting expectations for corporations and other entities, and with regulators on climate-related disclosure requirements ►Investors routinely sign joint letters addressing governmental bodies on climate change	Investors with trillions of dollars of assets under management coordinate climate-related engagements with corporations and policymakers through the Interfaith Center on Corporate Responsibility and the Principles for Responsible Investment's Collaboration Platform, as well as are members of the recently launched Climate Action 200+ initiative.
Directionality	*Investors corporations and governments readjust their fundamental strategies to align with the goals of reducing greenhouse gas emissions and increasing dependence on renewable energy sources.*	►A substantial percentage of investors demonstrate an understanding of the necessary role of regulatory change in shifting the global economy away from fossil fuels and act on that understanding through supporting changes relating to a transition to low-carbon economies that affect the fundamental operations of the financial markets ►A substantial percentage of governments/regulatory bodies have established new policies or rules intended to encourage positive investments in renewable energy	In 2015, governments from around the world met in Paris at the United Nations 21st Framework Convention on Climate Change and agreed to announce their Intended Nationally Determined Contributions to greenhouse gas emission reductions. Also in 2015, promulgation of Article 173 of the French Energy Transition Law required companies to disclose their climate-related financial risks and policies to manage them, and investors to disclosure how they are integrating ESG factors into their decision-making and are aligning these decisions with the country's energy plans for a transition away from fossil fuels.

3. Implications and Further Needed Research

This report outlines a preliminary roadmap to assessing system-level and SDG investing, and provides an example of how that roadmap can be used to address the system-level issue of climate change. However thorough, the research and this report also raise various questions for exploration as part of future work on developing system-level strategies, investor contribution to progress toward the SDGs, and measuring the influence of system-level investment. More specifically, the research raises issues regarding how the Tools of Intentionality are manifesting with corporations and government, reporting on system-level investing progress, identification of data sources for system-level indicators, cross-walking the roadmap with other measurement frameworks and initiatives, further exploration of system-level considerations and market beta, and designing compensation and system-level based incentive structures.

► CORPORATIONS AND GOVERNMENT

Beyond the investment community, corporations and government are two of the other target groups that are crucial for achieving system-level influence goals. The ability of asset owners and managers to assess the impacts of their investments at systems levels depends, to a certain extent, on their ability to understand how the corporations in which they invest have or have not taken systems-level considerations into account. Similarly, government institutions like central banks have historically been charged with maintaining stability in the finances and growth of national economies—and they increasingly view the financial, environmental, and societal systems as fundamentally connected, and acknowledge that the environmental and societal systems' health is closely linked to long-term economic prosperity.[67]

In either case, more research is needed to determine how the Tools of Intentionality—or variants and extensions of the concepts—are manifesting with corporations and governments, which would then pave the way for the opportunity to more consistently and credibly assess the effectiveness of these activities.

► REPORTING

While the implications of what the integration of system-level considerations means for a framework for measurement are becoming clearer, the opportunity to explore the implications for reporting are still quite ripe. In the same way that measurement at the portfolio-level is different from that at the system-level, system-level reporting will necessarily differ from the kind of portfolio-level reporting on social and environmental impact that is now being done (i.e., counting the megawatts of renewable energy generating capacity created, or micro-loans made, or affordable housing units built). Key questions that need to be explored further include: What is the relationship between system-level reporting and various indicator frameworks (like the SDGs)? How does such reporting relate to, or compliment, Principles for Responsible Investment reporting and other types of sustainability and impact reporting? How does it relate to financial performance reporting?

► DATA SOURCES

This report helps investors justify which system-level issues they might focus on and establish corresponding goals, select tools for achieving these goals, and measure progress toward achieving the goals. It does not provide guidance on how an investor might obtain data on recommended measurement indicators. This is a key consideration and one that is fundamental to determining the quality and credibility of the assessments generated. For instance, while some investors rely on surveys and third-party research to obtain data on their investments, others utilize statistics bureaus to obtain data on the indicators they track. Many of the data sources recommended for metrics and indicators associated with IRIS and the SDGs are also applicable to this roadmap. That said, as investors engaging in system-level investing grow in number and activity, so too will the sophistication with which they design influence assessment indicators that measure adaptability, clarity, connectivity, and directionality.

► ALIGNMENT AND LINKAGES WITH OTHER FRAMEWORKS AND INITIATIVES

This report highlights various metrics, frameworks and resources related to portfolio-level measurement of

impact and environmental, social, and governance (ESG) considerations. Still other frameworks and initiatives have emerged for system-level insights such as alternatives to gross domestic product (GDP) as a measure of the health of society that have been developed by such organizations as the Social Progress Imperative (Social Progress Index), New Economics Foundation (Happy Planet Index), and the Genuine Progress Project (Genuine Progress Indicator) or the U.N. Development Program's indicators for the measurement of progress at a national level along a range of social and economic factors under the rubric of the Human Development Index, to name just a few.[68]

With the exception of the GIIN's IRIS and the U.N.'s SDGs, however, this report does not generally speak to if or how leading principles, guidelines, indicators, tools, ratings and rankings align with and/or link to this roadmap. For example, while the PRI is a framework for responsible investment, the IRIS catalogue of metrics can support adherence to components of it.[69] A similar crosswalk needs to occur between this roadmap and other resources and approaches to demonstrate how influence measurement aligns with or otherwise compliments existing efforts.

In addition, further exploration should be made of how the approach to system-level considerations outlined here relates to calls for reforms of the financial system such as those of Aviva in its *Roadmap for Sustainable Capital Markets*, the U.N. Environmental Program's *Inquiry: Design of a Sustainable Financial System*, and the High Meadows Institute's *Future of Capital Markets* project.

► FINANCIAL PERFORMANCE

As touched on briefly in the Supplemental Appendices companion document to this roadmap, system-level factors can affect entire markets, and hence all portfolios, in substantive ways. Investors on the whole benefit from the performance of the overall markets, driven in large part by the performance of the economy. It is this market "beta"—swings in benchmark performance against which investors' performance is often measured—that is the primary source of long-term returns, rather than the "alpha" that individual investors generate by outperforming (or underperforming) benchmarks. [70] Alpha is a zero-sum game, difficult for any single manager to generate consistently and impossible for more than half of all capital invested to claim at any one time. More research is needed to help demonstrate how market beta represents an extra advantage to investors through the creation of long-term value and benefits them individually and collectively.[71]

► COMPENSATION AND SYSTEM-LEVEL BASED INCENTIVE STRUCTURES

To align interests and motivate performance, numerous investors have begun to implement impact-based incentive structures across asset classes. For instance, in the private equity space a number of investors have implemented impact-based incentive structures or have participated in funds with such practices. The GIIN profiled three such entities—including Aureos Capital's Africa Health Fund, Core Innovation Capital, and UBS—that use "the traditional private equity or fund of funds compensation model as the basis for their impact-based incentive structures."[72] Researchers identified a series of related key considerations these investors make to "determine a compensation design that aligns with their financial and impact objectives" including: whether or not incentives should address the portfolio's short-term or long-term performance (or both), penalize and/or reward investors for the extent to which impact targets are met, etc. [73]

Researchers at FCLT Global traversed similar terrain in the public equity space and the broader institutional market more generally by calling attention to the importance of embedding long-term objectives into investment management mandates (or contracts) that define the relationships between asset owners and asset managers. Key considerations for provisions specifically orientated towards long-term goals include whether or not incentives support a long-term relationship, the ongoing communications concentrate undue attention on the short-term, the focus is on leading or lagging indicators or performance, etc. [74] Incentive-based considerations like these will also need to be considered when determining a system-level based compensation structure that serves to motivate and guide investor activity.

4. Conclusion

System-level frameworks like the U.N. Sustainable Development Goals present a powerful opportunity for a diverse set of investors to contribute environmental or social impact through individual market transactions (i.e., portfolio-level strategies) and to align their policies and practices with broader system-level objectives. Thus far, though, little in the way of guidance helps investors that are struggling to answer the fundamental question: *How can I measure whether I, as a long-term investor, have contributed to promoting the long-term wealth-creating potential of the environment, society, or the financial system?*

Central to the answer to this question of measurement is determining how investors can influence four foundational characteristics of these environmental, societal, and financial systems. These characteristics—adaptability, clarity, connectivity, and directionality—serve as the core indicators of systems' health and resilience (or lack thereof). With these indicators as beacons lighting the way, investors can chart a course to assess system-level issues appropriate for their consideration and establish effective goals for influence against which to measure progress. In doing so, they can also assess the potential usefulness of the tools available to them and the effectiveness of the tools they have selected. Ultimately, this will allow them to assess their influence in determining changes at the system-level itself and the potential contribution of their role.

Investors might already be familiar with a few of the stops along this road. But much of what asset owners and managers encounter may seem foreign as it draws from the field of systems dynamics to bring into focus how investors, individually or collectively, can achieve system-level influence and paradigm change.

To be sure, much work still needs to be done. System-level reporting, data sources for metrics and indicators, and incentive structures are just a few areas that need be better charted. What is clear, though, is that measuring the effectiveness of system-level investing is possible; it is the foundation upon which investors can base consistent, system-wide impact over time and protect the ability of their funds to generate returns in the long term. To paraphrase the business management pioneer Peter Drucker, the only way investors will be able to effectively manage the wealth-creating potential of these systems is if they measure their influence on them.

Acknowledgments, Author Information, & About TIIP

ACKNOWLEDGEMENTS

For their helpful comments and suggestions on various drafts of this paper, TIIP would like to thank Jon Lukomnik, Will Morgan, Michael Musuraca, Brian Tomlinson, Brian Trelstad and Sandra Waddock. For its financial support for this and related TIIP projects, we would also like to thank the IRRC Institute.

AUTHOR INFORMATION

The authors of this TIIP report are William Burckart, Steve Lydenberg, and Jessica Ziegler.

William Burckart. Mr. Burckart is the President and COO of The Investment Integration Project (TIIP). He has been at the forefront of impact investing and has contributed to the field through groundbreaking research, including leading a multi-year field building effort focused on the financial services industry in collaboration with the Money Management Institute; managing the production of (and is a contributing author to) the *New Frontiers of Philanthropy: A Guide to the New Tools and Actors that Are Reshaping Global Philanthropy and Social Investing* (Oxford University Press: 2014), and was involved in the writing of the *Status of the Social impact investing Market: A Primer* (UK Cabinet Office: 2013) that was distributed to policymakers at the inaugural G8-level forum on impact investing. Mr. Burckart is a visiting scholar of the Federal Reserve Bank of San Francisco, and is a founder or co-founder of two impact investment advisory firms (Burckart Consulting and Impact Economy LLC).

Steve Lydenberg. Mr. Lydenberg is TIIP's Founder and CEO. He also serves as Partner, Strategic Vision of Domini Social Investments where he provides strategic vision and direction to guide the firm's policies, procedures, and daily practices. Mr. Lydenberg previously served as the firm's Chief Investment Officer and was a co-founder of the Domini 400 Social Index, the first index to utilize social and environmental standards. In addition, Mr. Lydenberg is the Founding Director of the Initiative for Responsible Investment (IRI) at the Kennedy School of Government at Harvard University, which was established to provide institutional support for catalytic activity for responsible investment, broadly construed, with a strong focus on creating a foundation of research activity around the field. He has published widely on responsible investment and corporate social responsibility and is a CFA charter holder.

Jessica Ziegler. Ms. Ziegler is the Associate Director for Research at TIIP, where she oversees and directs the execution of all TIIP research projects. Ms. Ziegler has extensive experience in research design, data collection and rigorous qualitative data analysis. She comes to TIIP from Mathematica Policy Research—an industry-leading public policy research firm—where she spent eight years conducting rigorous social policy evaluations. Ms. Ziegler has authored more than a dozen analytic reports on the implementation, costs and effectiveness of federally-funded workforce development, family support and education programs; her reports are used by foundations, non-profits and federal, state and local policymakers to inform policy reform and program improvements. Ms. Ziegler holds a Master of Public Policy from Johns Hopkins University and a Bachelor of Arts in Policy Studies from Dickinson College.

ABOUT TIIP

TIIP helps institutional investors understand the big picture, or "systems-level," context of their portfolio-level decisions. This is important because "systems-level" events, such as economic crises, ecosystems under stress, and societies in turmoil can disrupt the best-laid plans of investors and cost them dearly. Even seemingly "local" issues are now having much greater impact than they once did as the world becomes increasingly interconnected. TIIP designs, provides and maintains data and analytics that enable institutional investors to make this important connection between portfolio-level decisions systems-level considerations. TIIP's research portal and database of investor profiles, market analysis, and practical guidance provides a way to better match investors, benchmark systems strategies, and optimize program development. Investors leverage TIIP's data and analytics to solve program inefficiencies, enhance impact measurement, and boost absolute returns. Learn more at www.tiiproject.com.

Endnotes

[1] As of February 2018, there were 1,915 signatories to the Principles for Responsible Investment. For the most current listing of signatories, visit the PRI's website as https://www.unpri.org/directory.

[2]In the U.S. alone "The market size of sustainable, responsible and impact investing in the United States in 2016 is $8.72 trillion, or one-fifth of all investment under professional management" … "a 33 percent increase since 2014." *US SIF. Report on U.S. Sustainable, Responsible and Impact Investing Trends 2016*. 11th Edition. Pg. 5.

[3]William Burckart, Steve Lydenberg, and Jessica Ziegler. *Tipping Points 2016: Summary of 50 Asset Owners' and Managers' Approaches to Investing in Global Systems*. The Investment Integration Project. 2016.

[4]U.N. Commission on Trade and Development. *Investing in Sustainable Development Goals: Action Plan for Private Investments in SDGs*. 2015. Pg. 7.

[5]C-Change. *SDG Investing: Advancing A New Normal in Global Capital Markets*. Jointly commissioned by the Financing for Development Office and the Division for Sustainable Development of the United Nations Department of Economic and Social Affairs. Spring 2017. Pg. 15.

[6]SDG Investing Initiative. *Building Highways to SDG Investing: Invitation to collaborate on a Dutch sustainable development investing agenda*. December 2016.

[7]C-Change. *SDG Investing: Advancing A New Normal in Global Capital Markets*. Jointly commissioned by the Financing for Development Office and the Division for Sustainable Development of the United Nations Department of Economic and Social Affairs. Spring 2017. Pg. 15.

[8]Amit Bouri. "The U.N.'s SDGs Deliver a Capital Call to the World". Institutional Investor. September 10, 2016.

[9]David Bank and Dennis Price. "Sustainable Development Goals take hold as a universal impact investment framework". ImpactAlpha. March 7, 2017.

[10]Ibid.

[11]Ibid.

[12]Sarah Rundell. "Dutch Pension Funds Embrace UN Goals". Top1000funds.com. August 17, 2017.

[13]Ibid.

[14]Donella H. Meadows. Thinking in Systems: A Primer. Edited by Diana Wright, Sustainability Institute. London. 2008.

[15]Such as Skopos Impact Fund and Bridges Fund Management and notable impact measurement organizations like The Global Impact Investment Network (GIIN). Skopos Impact Fund and Bridges Fund Management suggest that investors are largely familiar with goal-setting as it relates to their traditional (portfolio-level) investment activities and that such experience provides a useful model for impact-related goal-setting and point to the idea that "successful financial performance is typically determined according to whether it reflects the underlying goals of the investor – in terms of liquidity, financial risk and financial return" and suggest that similar logic applies to setting non-financial impact goals. The impact measurement guidelines developed by the G8's Social Investment Taskforce Working Group on Measurement—a group of 24 impact investing and measurement practitioners—emphasize that the first step of any measurement approach is to "articulate the desired impact of the investments." Doing so, says the group, "form[s] the basis of strategic planning and ongoing decision making and to serve as a reference point for investment performance."; Skopos Impact Fund and Bridges Impact+. *More than Measurement: A Practitioner's Journey to Impact Management*. October 2016; Social Impact Investment Taskforce (Established under the UK's presidency of the G8). *Measuring Impact: Subject paper of the Impact Measurement Working Group*. September 2014

[16] Steve Lydenberg. *Systems-Level Considerations and the Long-Term Investor: Definitions, Examples, and Actions*. The Investment Integration Project. 2017.

[17]Donella H. Meadows. Thinking in Systems: A Primer. Edited by Diana Wright, Sustainability Institute. London. 2008.

[18]For instance, where systems dynamics treat concepts like goals (i.e., the purpose of function of the system), paradigms (i.e., the mind-set out of which the system—its goals, structure, rules, delays, parameters—arises) and transcending paradigms as separate leverage points, we've integrated core features of each into our fourth type of influence: *directionality*. Similarly, we've translated leverage points like numbers (i.e., constants and parameters such as subsidies, taxes, standards), buffers (i.e., the sizes of stabilizing stocks relative to their flows), stock-and-flow structures (i.e., physical systems and their nodes of intersection), delays (i.e., the lengths of time relative to the rates of system

changes, balancing feedback loops (i.e., the strength of the feedbacks relative to the impacts they are trying to correct), and reinforcing feedback loops (i.e., the strength of the gain of driving loops) into the discrete concept of *adaptability*. Other leverage points such as information flows (i.e., the structure of who does and does not have access to information), rules (i.e., incentives, punishments, and constraints), and *self-organization* (i.e., the power to add, change, or evolve system structure) show up in our vernacular as *clarity* and *connectivity*.

[19]Notable proponents of the use of logic models for investment goal-setting include: (1) the G8's Social Investment Taskforce Working Group on Measurement, which encourages impact investors to develop impact goals using an "investment thesis" or "theory of value creation" (ToVC), a joint adaptation of the well-known impact value chain and logic modelling and theory of change approaches; (2) the Rockefeller Foundation, which similarly advocates for investor use of logic models to guide the establishment of impact goals. The Foundation notes that logic models (which it also refers to as "impact theses") help investors to "map the underlying assumptions about how impact will result from planned interventions."; (3) a group of development finance institutions (DFIs) that have embraced the Managing for Development Results (MfDR) framework, which recommends using a "results chain" to systematically outline and define desired impacts and outcomes—and influence—and those inputs, activities, and outcomes that will help them achieve their goals, and; (4) New Philanthropy Capital who, when creating an environmental and social impact and influence assessment framework for the KL Felicitas Foundation, asserted that theories of change can be helpful to investors in articulating their goals and breaking them down into measurable outcomes; Social Impact Investment Taskforce (Established under the UK's presidency of the G8). *Measuring Impact: Subject paper of the Impact Measurement Working Group*. September 2014; Core components of the thesis or ToVC include clear articulation of the difference the investor seeks to make; key stakeholders and relative accountability to the goal; potential positive or negative changes resulting from the investment and their materiality; related social and environmental performance goals; the level at which the goals will be achieved (enterprise or ecosystem), and; potential risks to investee capital. Investors should assess draft theses and ToVCs to ensure, among other things, that resulting goals are aspirational, achievable, and reflect stakeholder input, and that related strategies are detailed, feasible, and include plans for measurement; Jane Reisman and Veronica Olazabal. *Situating the Next Generation of Impact Measurement and Evaluation for Impact Investing*. The Rockefeller Foundation. October 2016. Pg. 7; William Burckart, Steve Lydenberg, and Jessica Ziegler. *Central Bank and Development Finance Institution Approaches to Investing in Global Systems*. The Investment Integration Project. 2017; Abigail Rotheroe, Peter Harrison-Evans, Plum Lomax. *Investing for Impact: Practical Tools, Lessons, and Results*. KL Felicitas Foundation. November 5, 2015.

[20] Simon Bell and Stephen Morse. *Sustainability Indicators: Measuring the Immeasurable?* Second edition. (London: Earthscan) 2008:14-20.

[21] William Burckart, Steve Lydenberg, and Jessica Ziegler. *Tipping Points 2016: Summary of 50 Asset Owners' and Managers' Approaches to Investing in Global Systems*. The Investment Integration Project. 2016.

[22] Impact Measurement Working Group. *Measuring Impact*. Social Impact Investment Taskforce. September 2014.

[23] Ibid, 7.

[24] See the website of the Impact Management Project. Accessed at www.impactmanagementproject.com on February 16, 2018.

[25] See the website of IRIS. Accessed at iris.thegiin.org on February 16, 2018.

[26] Impact Measurement Working Group. *Measuring Impact*. Social Impact Investment Taskforce. September 2014. Pg. 8.

[27] "Building Highways to SDG Investing: Invitation to collaborate on a Dutch sustainable development investing agenda". SDG Investing (SDGI) Initiative. December 2016. Accessed on September 12, 2017: https://www.sdgi-nl.org/report

[28] Sarah Rundell. "Dutch Pension Funds Embrace UN Goals". Top1000funds.com. August 17, 2017.

[29] SDG Investing Initiative. *Building Highways to SDG Investing: Invitation to collaborate on a Dutch sustainable development investing agenda*. December 2016.

[30] Ibid.

[31] Initiative of the Sustainable Finance Platform, chaired by the Dutch Central Bank (DNB). *SDG impact indicators: a guide for investors and companies*. Pg. 3.

[32] University of Cambridge Institute for Sustainability Leadership (CISL). I*n search of impact: Measuring the full value of capital*. Cambridge, UK: Cambridge Institute for Sustainability Leadership. May 2016.

[33] See the website of United Nations Sustainable Development Goals. Accessed at http://www.un.org/sus-

tainabledevelopment on February 16, 2018.
[34] Intergovernmental Panel on Climate Change. (No date) *Climate Change 2014: Impacts, Adaptations and Vulnerability, Summary for Policymakers.* Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. (Geneva, Switzerland: Intergovernmental Panel on Climate Change).
[35] See the website of ClimateAction 100+. Accessed at http://www.climateaction100.org on February 16, 2018.
[36] See the website of Confluence Philanthropy. Accessed at http://www.confluencephilanthropy.org/The-Climate-Solutions-Collaborative on February 16, 2018.
[37] B. Ekwurzel, J. Boneham, M. W. Dalton, R. Heede, R. J. Mera, M. R. Allen, P. C. Frumhoff. "The rise in global atmospheric CO2, surface temperature, and sea level from emissions traced to major carbon producers." Climate Change. September 7, 2017.
[38] See the website of Cicero: The Global Carbon Project. Accessed at https://www.cicero.uio.no/en/posts/single/global-carbon-project on February 2, 2018.
[39] See the website of the Task Force on Climate-Related Financial Disclosures. Accessed on February 2, 2018. https://www.fsb-tcfd.org/about.
[40] Ibid.
[41] "Global Investors Statement on Climate Change." Developed by Asia Investors Group on Climate Change, Investor Group on Climate Change, Institutional Investors Group on Climate Change, Investor Network on Climate Change, Principles for Responsible Investment. September 2014.
[42] Ibid.
[43] "In unprecedented response, investors call on SEC to improve reporting of climate risks and other sustainability challenges." Press release. Ceres. July 2016.
[44] William Burckart, Steve Lydenberg, and Jessica Ziegler. *Tipping Points 2016: Summary of 50 Asset Owners' and Managers' Approaches to Investing in Global Systems*. The Investment Integration Project. 2016.
[45] See Ceres "Clean Trillion Campaign at https://www.ceres.org/campaigns/clean-trillion.
[46] Mark Cobley. "Blackrock Raises $1.4 Billion for Renewable Power Fund" Financial News July 19, 2017. Accessed on February 2, 2018 from https://www.fnlondon.com/articles/blackrock-raisesbiggest-fund-ever-in-renewable-power-20170719.
[47] Ibid.
[48] Anna Hirtenstein. "Green Really Is Gold for These Bond Lovers" Bloomberg News March 9, 2017. Accessed at https://www.bloomberg.com/news/articles/2017-03-10/new-shades-of-green-bondsseen-as-market-set-to-double-again on February 2, 2018.
[49] Clifford Krauss. "Norway's Wealth Fund Considers Divesting from Oil Shares" New York Times November 17, 2017: B3.
[50] John Schwartz. "Norway Will Divest from Coal in Push Against Climate Change" June 6, 2015: A1.
[51] William Burckart, Steve Lydenberg, and Jessica Ziegler. *Tipping Points 2016: Summary of 50 Asset Owners' and Managers' Approaches to Investing in Global Systems*. The Investment Integration Project. 2016.
[52] "Climate Action: Mayor, Comptroller, Trustees Announce First-in-the Nation Goal to Divest from Fossil Fuels" New York City official website. January 10, 2018. Accessed on February 2, 2018 from http://www1.nyc.gov/office-of-the-mayor/news/022-18/climate-action-mayor-comptroller-trusteesfirst-in-the-nation-goal-divest-from#/0
[53] Press release. "NZ Super Fund Announces Multi-Faceted Climate Change Strategy" October 19, 2016. Accessed at https://www.nzsuperfund.co.nz/news-media/nz-super-fund-announces-multi-facetedclimate-change-strategy on November 30, 2017.
[54] Ibid.
[55] William Burckart, Steve Lydenberg, and Jessica Ziegler. *Tipping Points 2016: Summary of 50 Asset Owners' and Managers' Approaches to Investing in Global Systems*. The Investment Integration Project. 2016.
[56] Fast Facts brochure. "Climate Change in Least Developed Countries." United Nations Development Program. November 2011.
[57] See the website of the Climate Investment Funds at https://www.climateinvestmentfunds.org/about/governance for details on the role of these multilateral development banks. Accessed on November 27, 2017.
[58] Nick Robins. "Investing in a Just Transition: Why Investors Need to Add a Social Dimension to their Climate Strategies and Where to Start?" *ESG Magazine* July 17, 2017.
[59] Samantha Smith. *Just Transition: A Report for the OECD* (Brussels: International Trade Union Confederation) 2017: 9,18.
[60] "How We Work" Just Transition Fund website. Accessed on February 16, 2018. http://www.justtransition-

fund.org/how-we-work.
[61] "CalPERS' Infrastructure Program to Purchase Stake in California Solar Power Company" CalPERS website. March 23, 2016. Accessed on February 2, 2018 from https://www.calpers.ca.gov/page/newsroom/calpers-news/2016/calpers-to-purchase-stake-incalifornia-solar-company
[62] William Burckart, Steve Lydenberg, and Jessica Ziegler. *Tipping Points 2016: Summary of 50 Asset Owners' and Managers' Approaches to Investing in Global Systems*. The Investment Integration Project. 2016.
[63] CBUS. *Annual Integrated Report 2016*. Melbourne.
[64] Laurie Meisler, Mira Rojanasakul and Jeremy Scott Diamond. "Who Gets Venture Capital Funding?" Bloomberg News. May 25, 2016.
[65] Temple Fennell, Daniel Goldman, David Miller, Chris Davis and Lindsey E. White. *Clean Tech 3.0: Venture Capital in Early Stage Clean Energy, A Changing Investing Climate*. Boston: Ceres. November 2017.
[66] William Burckart, Steve Lydenberg and Jessica Ziegler. *Central Bank and Development Finance Institution Approaches to Investing in Global Systems*. The Investment Integration Project. 2017. Pg 26.
[67] William Burckart, Steve Lydenberg, and Jessica Ziegler. *Central Bank and Development Finance Institution Approaches to Investing in Global Systems*. The Investment Integration Project. 2017. Pg 3.
[68] hdr.undp.org/en/content/human-development-index-hdi; Resolution adopted by the United Nations General Assembly, September 25, 2015. "Transforming Our World: The 2030 Agenda for Sustainable Development."
[69] iris.thegiin.org.
[70] Jim Hawley & Jon Lukomnik, *The Long and Short of It: Are We Asking the Right Questions? Modern Portfolio Theory and Time Horizons*, 41 Seattle U. L. Rev. 449 (2018).
[71] Ibid, 3.
[72] GIIN. *Impact-Based Incentive Structures: Aligning Fund Manager Compensation with Social and Environmental Performance. Issue Brief*. December 2011.
[73] Ibid.
[74] FCLT Global. *Institutional Investment Mandates: Anchors for Long-term Performance*. FCLT Global. May 2017. Pg. 3.