April 2016

# Disclosure Matters

## Environmental Data Improves the Investment Decision-Making Process

TERRA ALPHA
INVESTMENTS

Terra Alpha Investments, LLC is an advocacy investment firm established in 2014.

Our vision is to drive systemic change in our economy, so that it is more aligned with our natural systems.

Our firm's mission is to demonstrate that Environmental Productivity enhances long-term returns as expressed in real investment results and to advocate for the widespread adoption of Environmental Productivity across the global economic system.

At Terra Alpha Investments, LLC, we advocate for the accounting for and disclosure of relevant environmental data from company operations because we see it as material to thorough investment research and understanding corporate efficiency. Using company-reported data (not third-party estimates), we compare the resource intensities of companies to peers in their sub-sector. If a company surpasses a threshold of efficiency relative to its peers, it is eligible for consideration based on our fundamental and valuation analysis process.

Authors

Brendan Corbett, *Research Analyst*

Amy E. Dine, *Director of Advocacy*

Contributors

Rita Morency, *Research Analyst*

Wynn Tucker, *Environmental Productivity Intern*

Daniel Sanborn, CFA, *Director of Investment Data & Research*

Andrew Geller, *Senior Partner and Chief Financial Officer*

Timothy P. Dunn, CFA, *Founder, Managing Member, and Chief Investment Officer*


April 2016

119 The Plains Road, Suite 250 • Middleburg, Virginia 20117
www.terraalphainvestments.com

## Introduction

Corporate disclosure of environmental data involves the disclosure by a firm of its environmental performance information. This process serves to reveal constraints, risks, and opportunities for both businesses and investors. In recent years, increased environmental stresses, greater regulation from both governments and exchanges, and increased investor demand have all helped to spur a rapid rise in the quantity and quality of corporate environmental disclosure. However, several key issues surrounding the environmental data collection and disclosure process must be resolved in order for the practice to reach true corporate ubiquity. These issues include: standardization of environmental data and reporting processes, materiality of environmental data, accuracy of this information, and incorporation of environmental data into the traditional corporate financial reporting process.

As these issues are resolved, both companies and investors will benefit. Companies that measure and disclose these factors will be better positioned to manage their businesses and succeed in an increasingly resource-constrained world. Investors can make informed decisions that maximize risk-adjusted returns by incorporating environmental disclosure data into their investment processes.

This report is intended to inform investors about the progress, landscape, and accessibility of the environmental data disclosure process. This report is not intended to cover the social or governance aspects of sustainability reporting. These factors tend to be measured and assessed very differently than environmental data and are largely less quantitative and often less actionable. This report specifically focuses on the most broadly disclosed areas of environmental performance: greenhouse gas emissions, water use and impact, and waste generation.[1]

Key takeaways:

I. **Context- Environmental data disclosure has rapidly evolved in the past two decades.** For the first time, corporate environmental data is available on a large scale.
II. **Current Issues- The landscape of environmental data is still evolving.** Several key issues surrounding this community (standardization, materiality, verification, and integration) are being resolved as it matures.
III. **Process- A company's path to disclosing environmental data starts with measurement and ends with continued management.** The disclosure process grants both companies and their investors another perspective on their overall performance.
IV. **Access- There are a growing number of avenues through which investors can acquire corporate environmental data.** This proliferation allows investors greater flexibility in how they attain this data and provides a means to cross check for accuracy.
V. **Use-** Investors can and should use this information to make more informed investment decisions. Environmental data is an essential component of the Terra Alpha Investments, LLC investment process.

## I. Context

Environmental data reporting is a relatively recent addition to the corporate disclosure landscape. Similar to the development of financial disclosure regulations and accounting standards (which were codified in reaction to grave incidents like the 1929 market crash and the U.S. Great Depression), environmental disclosure began as a reaction to acute problems that had a sudden and visible impact on the environment, people, and property.

The 1984 Bhopal, India gas tragedy, along with several other less severe incidents in the United States, catalyzed the U.S. passage of the 1986 Emergency Planning and Community Right-to-Know Act. Corporate environmental data disclosure was created **from a provision in this act, the Toxics Release Inventory (TRI).** The TRI required certain U.S. manufacturing facilities to report annually on releases and transfers of toxic materials and created a national public disclosure database to track companies, chemicals, and spills.

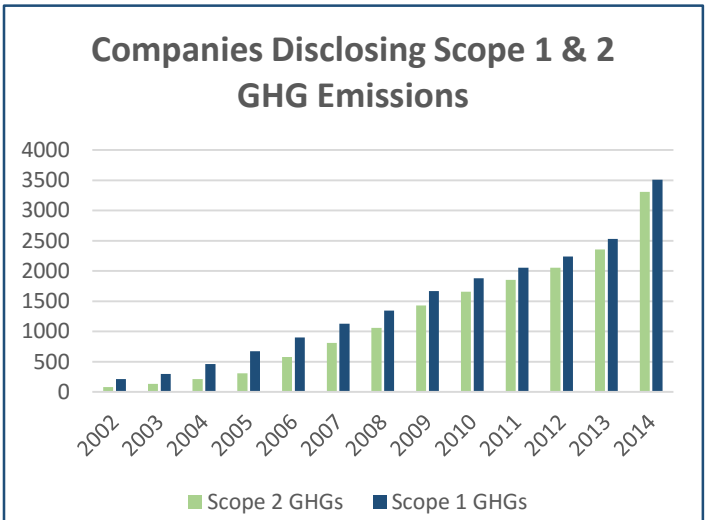
**The TRI was the first disclosure system that required companies to report any environmental data.** Following this mandatory reporting of quantitative emissions data, firms in the U.S. and Europe began to voluntarily publish reports detailing their own environmental programs. These reports allowed companies to place the data in the context of the firm's overall environmental management efforts.

**Brief Timeline of Environmental Data Disclosure**

| | |
|---|---|
| **1989** | **Chemical and petroleum companies were among the first to publish environmental reports; Polaroid being one of them.** (http://www.bmpcoe.org/library/books/navso%20p-3680/43m.html; https://www.eli.org/sites/default/files/docs/panel_1.1_-_wayne_balta_-_presentation.pdf) |
| **1989** | Following the Exxon Valdez disaster, the non-profit group Coalition for Environmentally Responsible Economies (CERES) was established and created the first suggested guidelines for environmental reporting. |
| **1993** | **The U.S. SEC issued a bulletin that required publicly-held firms to disclose environmental exposures exceeding $100,000 in their annual reports.** |
| **2000** | The Global Reporting Initiative (GRI) released their first guidelines. |
| **2000-10** | The number of companies publishing sustainability reports **according to a framework** (Global Reporting Initiative) **rose from 44 to 1,973.** (http://www.stakeholderforum.org/fileadmin/files/The%20consequnces%20of%20Mandatory%20Sustainability%20Reporting.pdf) |
| **2010** | The Johannesburg Stock Exchange required integrated reports from listed companies. |
| **2012** | Brazil, Denmark, France, and South Africa formed The Group of Friends of Paragraph 47, to advance sustainability reporting through policy and regulation. Argentina, Austria, Chile, Colombia, Norway, and Switzerland have since joined. |
| **2013** | Over 4,000 companies used GRI's guidelines to build sustainability reports. |

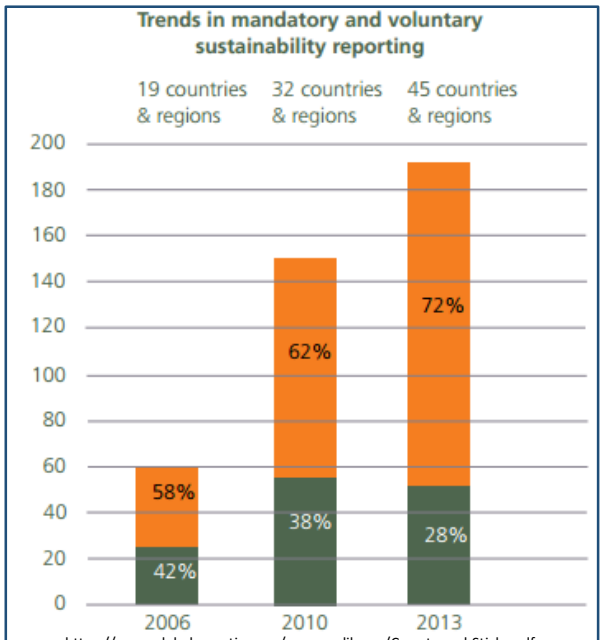
| | |
|---|---|
| **2013** | **Less than 100 firms reported environmental data in the early 1990s, but by 2013 more than 6,000 companies globally were issuing company reports** detailing their environmental impacts. (Ioannou, Serafeim 2014) |
| **2006-13** | CDP's response rates for climate change data from the S&P 500 companies grew from 47%-70%. Companies disclosing GHG emissions grew from 8% to 100% of the S&P 500. |
| **2014** | The EU adopted PE-Cons 47/14, which requires large companies to report on policies, performance, and principal risks related to the environment (among other factors). Companies also must undertake supply chain due diligence on these issues. (http://register.consilium.europa.eu/doc/srv?l=EN&f=PE%2047%202014%20INIT) |

Even though it is still largely a voluntary action, corporate disclosure of environmental data is far from uncommon. As of 2014, 39% of the 4,609 largest companies listed on the world's stock exchanges disclose information on their GHG emissions.[2] Reporting and disclosure have grown to a point that in 2015, well-known universities around the globe now offer courses on corporate reporting of environmental data (e.g., Columbia University, Université du Luxembourg, and University of Queensland). Today, several stock exchanges also require listed companies to disclose sustainability information (e.g., Brazil's BM&F Bovespa and South Africa's Johannesburg Stock Exchange).[1] **Environmental reporting will likely see further increase in the near future as a growing number of countries and stock exchanges around the world are regulating and requiring sustainability reporting.[3]**




The number of companies disclosing scope 1 GHG emissions[1], the most commonly reported environmental metric, has increased over 16-fold from 2002-2014. (Trucost)

[1]Direct GHG emissions from company assets




https://www.globalreporting.org/resourcelibrary/Carrots-and-Sticks.pdf

| *Carrots and Sticks* Publications | | 2006 | | 2010 | | 2013 | |
|---|---|---|---|---|---|---|---|
| Initiatives | Mandatory | 35 | 58% | 94 | 62% | 130 | 72% |
| | Voluntary | 25 | 42% | 57 | 38% | 50 | 28% |
| | **Total** | **60** | | **151** | | **180** | |
| **Countries & Regions** | | **19** | | **32** | | **45** | |

[1] This report employs the term sustainability reporting, as defined by the Global Reporting Initiative (GRI), "company reporting that gives information about economic, environmental, social and governance (ESG) performance." This term can be considered as synonymous with other terms for non-financial reporting, such as ESG, corporate social responsibility (CSR) reporting, etc.

## II. Current Issues

The key issues currently surrounding environmental data disclosure are:

A. Universal Standards
B. Materiality
C. Assurance/Verification of Data
D. Integrated Reporting

## A. Universal Standards

One of the largest conversations surrounding environmental data disclosure is standardization. Determining **which standard(s) should be used remains undecided** amongst environmental data disclosure proponents, let alone the wider financial community. The comparability and actionability of much of the sustainability data currently reported by companies is restricted by the lack of uniform standards.

**There are several widely used environmental disclosure frameworks and standards (GRI, CDP & SASB), however, none is able to call itself universally used** (See Appendix A). Companies can use these different reporting guidelines to disclose data, as well as disclose to a variety of outlets. Many companies only partially disclose data or do not use any accepted framework for their disclosure. A 2015 study by the United Nations Environment Program (UNEP) found that some companies reported environmental data in absolute terms while others used intensity metrics. More importantly, very few companies explained measurement methods for each factor.[1] This inconsistency amongst various calculation standards and reporting frameworks reduces environmental disclosure's utility to the investment community.

**All major disclosure standards, reporting, and framework organizations share the aim to facilitate the release of sustainability information, just according to their own method or audience.** However, there is an increasing amount of collaboration between organizations in order to improve the focus of frameworks and further standardize environmental reporting across the globe. For example, in 2013, Global Reporting Initiative (GRI) and CDP, agreed to work closely for future iterations of their respective guidelines and questionnaires. Many frameworks also have memorandums of understanding amongst each other to consult with one another moving forward (e.g., GRI has seven linkage documents with other disclosure organizations currently published).[4]

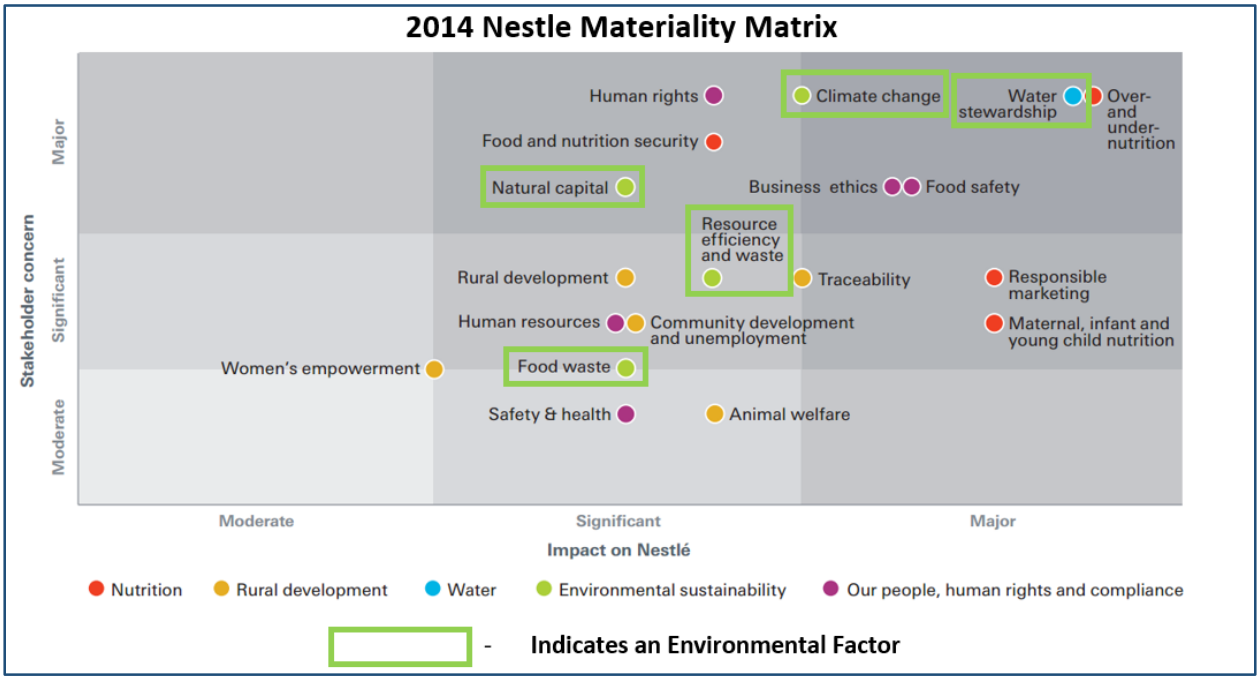
## B. Materiality

The materiality of environmental data has been a principal point of contention for many environmental disclosure skeptics; they do not see it as significant information for their decision-making due to several key issues.

- **Distinction -** Proponents tend to promote and package environmental metrics along with corporate social and governance factors (ESG), as helpful and 'the right thing to do.' This tends to obfuscate the effect of environmental factors on returns and alienate investors who might not view social or governance factors as equally material.

- **Definition-** Also under discussion and unresolved are the different definitions used for "materiality." Different organizations employ different scopes of stakeholders in determining what is or isn't material. A company or investor may have a narrower lens in determining what is material to their investment decisions, in comparison to an NGO. The U.S. Supreme Court provides a definition as well: information presenting "a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of information made available."[5] While vague, if information is deemed to meet this description, it is legally required to be included in the reporting cycle. SASB employs the Supreme Court definition, however, GRI's definition applies to a larger group of stakeholders (See Appendix B).

- **Delineation-** There is no consensus amongst ESG stakeholders on which factors are material, to the exclusion of others. Although a consensus is still lacking, certain environmental metrics are much more commonly reported than others. A recent study by CK Capital identified four environmental indicators (GHG emissions, waste, water, and energy) as the most frequently reported by public companies and relevant across all industries.[6] Additionally, materiality of factors can vary across sectors or even between individual companies. In response, frameworks such as GRI request that companies rank factors according to their company-specific materiality (see below), while SASB has created their own framework of standards for sector-specific materiality (See Appendix A).




- **Regulation-** While disclosure of environmental and all ESG information generally remains voluntary, there are an increasing number of countries and stock exchanges where it is now a requirement - but there is no uniform expectation.

Encouraging Signs in Regulation

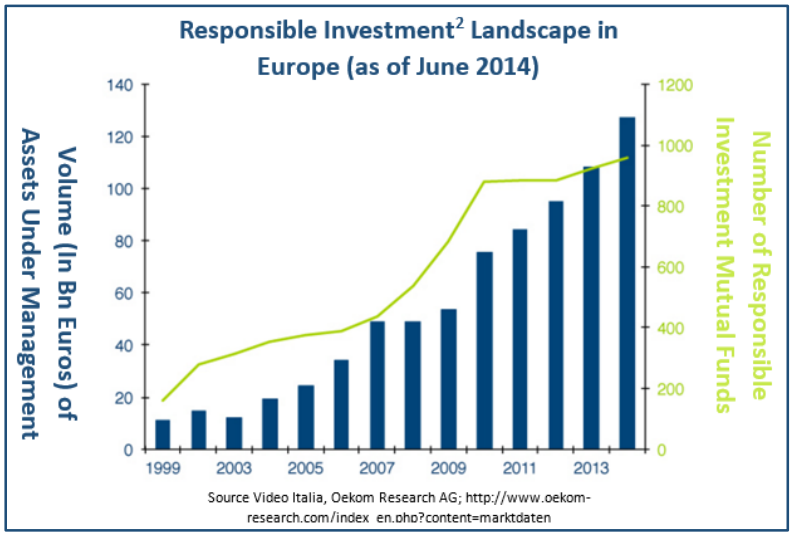
- In 2009, the U.S. government mandated that all federal agencies report and set baselines and targets for their scope 1, 2 & 3 emissions.[1] Government suppliers were encouraged to do the same.[2]
- As of 2014, 33 countries as well as the EU have set regulations that require some aspect of disclosure on environmental or social factors.[3]
- Approximately 20 stock exchanges all over the world had either provided guidance on ESG reporting as part of voluntary programs or had specific reporting requirements by 2014.[3]

[1]See Terra Alpha GHG Primer for more information on Scopes 1, 2 and, 3. (http://www.terraalphainvestments.com/resources/)
[2](http://www.gsa.gov/graphics/admin/GSA_Section13_FinalReport_040510_v2.pdf)
[3](Figure based on information compiled by initiative for Responsible Investment at Harvard University (2014). Global CSR Disclosure Requirements Retrieved from http://hausercenter.org/iri/about/global-csr-disclosure-requirements)


The materiality of environmental data continues to be examined, however, a variety of studies currently illustrate a material link between attention to environmental criteria and financial profitability:

- CDP's Climate Leadership Index, based on global leaders of climate change mitigation, out-performed Bloomberg World Index by 9.6% between 2010 and 2014.[7]
- In Newsweek's 2009 "Green Rankings", firms in the top 100 - those who were more environmentally productive - outperformed the S&P 500 by 4.8% over the following two years.[8]

- A 2011 study by the Harvard Business School found that "High Sustainability firms dramatically outperformed Low Sustainability ones in terms of both stock market and accounting measures over the long term." [9]
- In a 2014 report by Ernst & Young, out of nearly 200 senior decision makers at global financial institutions, 90% reported non-financial performance as an integral part of their decision-making process.[10]



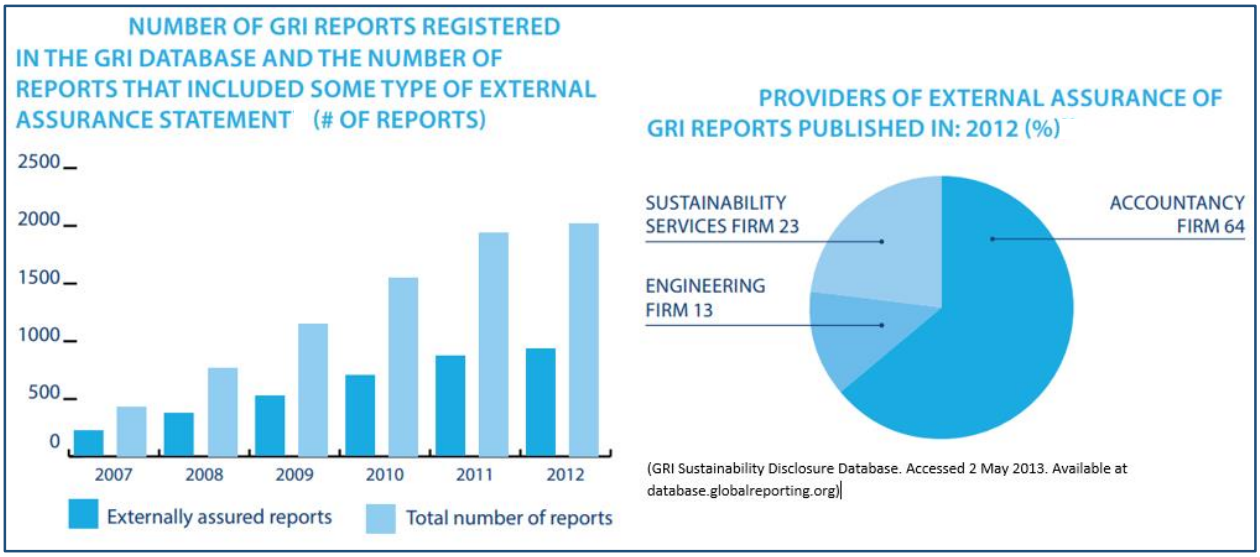

Interest in environmental data disclosure is gaining momentum. According to a 2014 UNPRI report, "there is an increasing recognition in the financial community that **effective research, analysis and evaluation of environmental issues is a fundamental part of assessing the value and performance of an investment over the medium and longer term**."[11] As a 2015 Harvard Business School study found, "a growing number of stakeholders, including investors, consumers, governments, and corporate customers are concerned that assessing organizational performance requires a more holistic picture than financial indicators can provide and have increasingly sought to convince companies to disclose information about their environmental performance."[12] In Europe, from 2012-2014, assets under management in responsible investment[2] funds grew 56% (1,874 funds and 372 billion € as of Dec, 2014). Of these funds, environmental performance was the largest thematic focus (31.8 billion € uniquely dedicated).[13]

## C. Assurance/Verification of Environmental Data

**Data Assurance/Verification is currently a voluntary process for companies and all reporting organizations.** The main verification standards used for environmental data disclosure are set by: the International Organization for Standardization (ISO), EU Emission Trading System (EU ETS), International Federation of Accountants (IFAC), AccountAbility (AA), and the Greenhouse Gas Protocol (GHGP) (See Appendix A). These standards are used by third-party providers in verifying disclosure data. Companies will also occasionally perform self-audits of data in environmental reports.

The three general types of organizations who perform **environmental data verification** are: **accounting firms, engineering firms, and sustainability service firms**. Availability, quality, and prevalence of disclosure verification are rapidly increasing. There is also a rising trend in the number of sustainability reports assured by a third-party.[14] According to KPMG's 2013 survey of corporate responsibility reporting, **more than half of the world's 250 largest companies are now investing in assurance**.

[2] Funds incorporating environmental, social, or governance performance (or some combination of the three) into their investment practices via a variety of strategies.




**The three main standards of assurance for environmental data used by verification agencies are ISAE 3000, AA1000AS, and ISO 14064-3.** ISO 14064-3 is a standard specifically for the validation and verification of greenhouse gas assertions. ISAE 3000 and AA1000AS are the two key standards used internationally for assurance of general sustainability reporting (See Appendix C). There are also regional equivalents and similar standards such as the ASAE3000 and the Attestation Standards AT101, as well as proprietary assurance protocols used by assurance providers which fulfill similar purposes to the standards.[15]

Assurance of environmental data faces two main problems. First, a lack of regulation requiring assurance of environmental disclosure data, and second, lack of a set standard for such disclosure. A 2013 KPMG survey on corporate reporting found "a need for increased regulation and mandating assurance as part of the sustainability or IR process."[16] A similar 2015 report by UNEP stated: "[environmental] reporting is challenged by the fact that third-party verification is often done on a voluntary basis and does therefore not hold the same credibility as mandatory financial auditing."[17]

**Both GRI & CDP recommend the use of external assurance for sustainability reports, but do not require it** to prepare a report "in accordance" with their guidelines. GRI provides services that help assure reporting is done according to their guidelines, but they are not a third-party verifier. In 2012, over 46% of reports listed on GRI's Sustainability Disclosure Database indicated some form of external assurance. **For CDP, verification is encouraged through the CDP scoring methodology**. The CDP methodology allocates 10-15% of a company's score to verification. Companies who claim to have been verified must attach a third-party verification/assurance statement.

Regardless of verification, companies are bound by federal law to report only accurate data. In the U.S., corporate officers who sign the Sarbanes-Oxley certification regarding the accuracy of the company's disclosures can face civil and criminal penalties for signing false certifications.

## D. Integrated Reporting

Integrated Reporting involves the inclusion of environmental data in official financial reports such as the 10-K or annual report (as opposed to publishing a separate sustainability report). Requiring companies to begin reporting their financial and non-financial performance in this manner would force investors to recognize environmental information as material.

While most companies that disclose environmental information continue to do so in separate reports, a growing number of companies are integrating their reports. A recent survey of 500 global business executives found that nearly 50% are moving towards integrated reporting and about 35% say they will adopt integrated reporting in the next two to three years.[18] Similarly, a 2015 Ernst & Young study found that out of over 200 institutional investors across the world, over 70% consider integrated reports essential or important when making investment decisions.[19]

Integrated Reporting is also making regulatory progress. As of 2010 in South Africa, listed companies on the Johannesburg Stock Exchange are required to adopt integrated reporting, or explain why they have not.[20] The principal organization behind this progress is the International Integrated Reporting Council (IIRC), whose mission is to create a globally accepted integrated reporting framework (See Appendix A).

A key distinction of integrated reporting is that any environmental data disclosed through these channels is subject to the same audit committee review procedures as financial data. This differs in an important way from sustainability data released only through voluntary reports.[21] Additionally, integrated reporting has the potential to speed up and standardize the rates at which environmental data is disclosed. Currently, lag time for the publication of sustainability reports can range anywhere from three to eighteen months.[22] This lag reduces the value of the disclosed data to investors. If the release of this information is included in standard financial filings and reports, it would be much more rapidly and consistently available to investors.

## III. Process of Measuring and Disclosing Environmental Data

There are several prerequisites to disclosure; measurement of environmental data is the first step. **Once something is measured, it can be evaluated and managed for efficiency and use.** Greater levels of public environmental data disclosure across sectors will also allow companies to benchmark their performance against their peers.

The following steps roughly illustrate how environmental data is collected and disclosed:

1. Develop and implement data gathering systems & infrastructure
2. Collect data from all company plants and buildings and gather relevant third-party information
3. Input and synthesize collected data
4. Cross-check information for accuracy
5. Internal evaluation
6. External verification/assurance
7. Report information to external stakeholders
8. Continue to monitor, collect, and disclose data over time

**Typically - but not universally - companies will collect and document data according to a known framework.** Companies who do not can publish information in their sustainability report however they like. Participating companies will report their environmental data and map the information to the relevant questions from the specific framework they are using (e.g., GRI or CDP). If they participate with any repository organizations, a company will also send their sustainability report to the organization's disclosure database. The data becomes available through GRI and other disclosure repositories with a lag - typically a minimum of six months or more after the calendar year end.

As an example, below is a snapshot from UPS's 2014 Sustainability Report:

## Statement of Greenhouse Gas (GHG) Emissions

for the years ended December 31, 2014 and 2013

G4-EN15 G4-EN16 G4-EN17

| GLOBAL CO2e Emissions ('000 metric tonnes) | 2014 | 2013 | % CHANGE 13/14 | BASE YEAR(1) |
|---|---|---|---|---|
| Scope 1 | 12,000 | 11,770 | 2.0% | 11,713 |
| Scope 2 | 870 | 828 | 5.1% | 831 |
| **Gross Scope 1 & 2** | **12,870** | **12,598** | **2.2%** | 12,544 |
| Scope 3 | 14,940 | 14,309(2) | 4.4% | 14,821(2) |
| **Gross Scope 1, 2 & 3** | **27,810** | **26,907** | **3.4%** | |
| Voluntary carbon offsets for Scope 1 carbon neutral service (retired) | (40.2) | (35.9) | | |
| Voluntary carbon offsets for Scope 2 carbon neutral service (retired) | (3.4) | (3.3) | | |
| Voluntary carbon offsets for Scope 3 carbon neutral service (retired) | (7.5) | (9.3) | | |
| **Net Global CO2e Emissions** | **27,759** | **26,858** | **3.4%** | |

| Biomass CO2 Emissions Not Included in Above Totals ('000 metric tonnes) | 2014 | 2013 |
|---|---|---|
| Mobile Combustion — Biomass CO2 (e.g. ethanol, biodiesel) | 80 | 45 |
| Stationary Combustion — Biomass CO2 | 0 | 0 |
| **Total Biomass CO2 (reported separately as per GHG Protocol)** | **80** | **45** |

(1) Base Year for Scope 1 and 2 is 2010 and for Scope 3 is 2012.
(2) Recalculated 2013 and Base Year Scope 3 GHG emissions using updated emission factors for Category 1, 2, and 3. See Note 1, Methodology for additional details.

Highlighted above are the GRI Framework standards referenced in the greenhouse gas disclosure section of UPS's 2014 Sustainability Report.

## IV. Access to Environmental Data

**Finding the Environmental Data:**

1) **Company Reports**- Self-reported company data is generally available on the company's website via their sustainability report. Often, this report is a combination of a narrative and numbers measuring outputs and inputs related to natural resources. The data can be organized and presented in the context of a known framework, or not. Companies note to which question in the framework particular information relates.

2) **Data Repositories**- GRI and CDP collect and offer access to company disclosures. Their websites are full of the aggregated environmental data kept over time. General disclosure or industry reports as well as environmental reports on specific companies are available to supporters of CDP on their website (See Appendix A).

3) **Third-Party Vendors**- Third-party vendors gather environmental data and can distribute it via a data feed subscription. Typically these companies (e.g., Bloomberg, Trucost, Thomson Reuters) are collecting data from the main reporting standards organizations previously mentioned, as well as checking with individual companies (See Appendix A).

## V. How Terra Alpha Uses Environmental Data

Our investment philosophy and mission at Terra Alpha Investments are based on the premise that as companies more effectively manage their intensity of natural resource use and environmental impact, they are positioning themselves to succeed in an increasingly resource-constrained world. Environmentally Productive companies operate more efficiently and therefore will be more profitable and sustainable entities over time compared to their peers.

We collect actual reported environmental data for our process in more than one way:

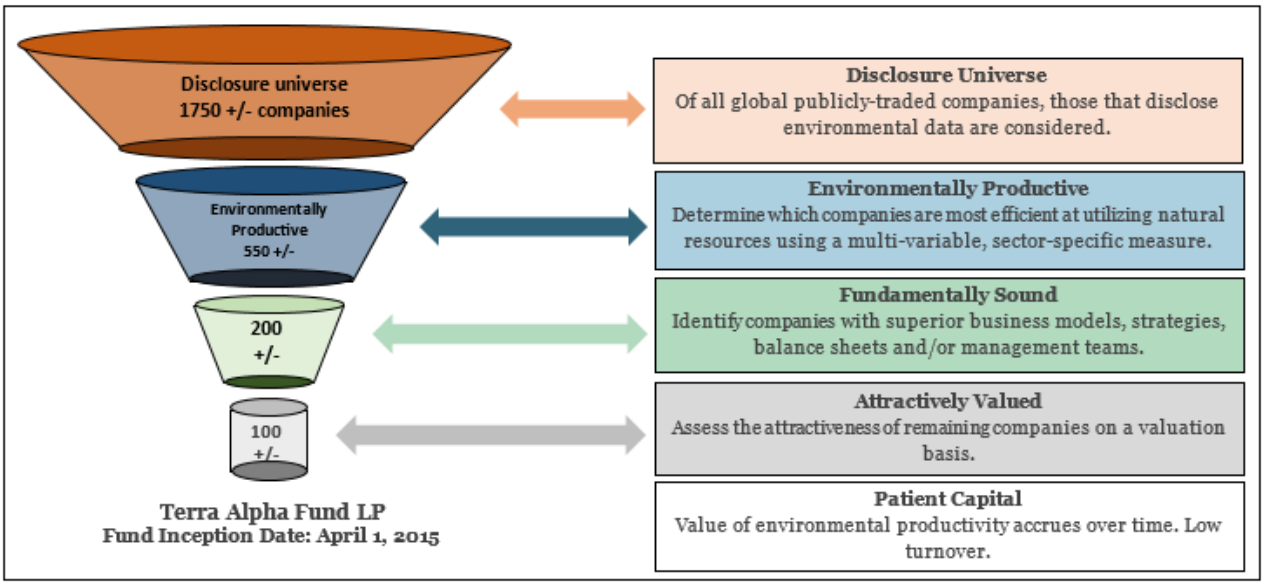
- We receive data from a third-party vendor.
- We use CDP framework reports on companies.
- We directly check company Sustainability Reports.
- We do not use estimated data.

We research the environmental data to be sure it is complete and we clarify with companies directly if there is any doubt. Environmental data is fundamental to our investment process, and we expect it to be as complete and accurate as possible.

We examine the intensity of natural resource use in companies. Currently we pay close attention to GHG emissions.[3] We consider both Scope 1 emissions[4], as well as Scope 2 emissions.[5] We also incorporate water use and waste generation data into our evaluation as secondary factors, when available.

Environmental data is used in our first step, to help us create our Environmentally Productive Investable Universe. The table below shows our full investment process:

**Our Data-Driven Investment Process**




[3] See Terra Alpha GHG Primer for more information on greenhouse gases (http://www.terraalphainvestments.com/resources/)
[4] Direct GHG emissions from company owned or controlled assets (e.g., factory or vehicle fleet)
[5] Purchased steam, heat, electricity, and cooling (e.g., electricity purchased from power company)

**Conclusion: Environmental Data Improves the Investment Decision-Making Process**

- Environmental data disclosure has rapidly evolved in the past few decades. There is now an actionable amount of information from companies to be incorporated into investment decisions.
- Increasing action from governments, exchanges, companies, and investors indicate the availability of this information will continue to grow.
- Yet, there still are a variety of issues that the field of environmental data disclosure faces: the need for further standardization, questions surrounding materiality and assurance, as well as the demand for the integration of this information into the standard financial reporting process.
- The methods for collecting and reporting this data are not overly complicated. As mandatory and voluntary reporting grows and best practices are established, the quantity and quality of this data will continue to improve.
- Investment professionals can and should use environmental data to make more informed investment decision on behalf of their investors.

## Appendix A - Disclosure Tools, Frameworks and Standards

| Targeted Towards Companies | Targeted Towards Investors | Framework/Standard | Disclosure Tool |
|---|---|---|---|

| | | |
|---|---|---|
|  | **AccountAbility** |  |
| AccountAbility is an independent, global non-profit organization who publishes some of the primary standards series used in ESG reporting (AA1000) as well as providing research, strategy, stakeholder engagement, and reporting services for businesses. | | |
|  | **Bloomberg** |  |
| Bloomberg, accessible on their business information terminals, has a robust ESG category of information for each company that discloses environmental, social, and governance information. | | |
|  | **CDP (formerly the Carbon Disclosure Project)** |  |
| CDP operates one of the largest corporate environmental data disclosure programs in the world. With Climate Change, Water, Supply Chain and Forests surveys, CDP collected responses from over 5,600 companies in 2015. CDP both creates the survey frameworks as well as operates a database of company responses for both investors and companies to access. | | |
|  | **Climate Disclosure Standards Board** |  |
| The Climate Disclosure Standards Board (CDSB) is an international consortium of business and environmental NGOs. They offer companies a framework for reporting environmental information. This framework also builds on the most widely used reporting approaches to minimize complexity for investors and financial markets. | | |
|  | **Corporate Reporting Dialogue** |  |
| The Corporate Reporting Dialogue is an initiative designed to respond to market calls for greater coherence, consistency, and comparability between corporate reporting frameworks, standards, and related requirements. Their Corporate Reporting Landscape Map provides a snapshot of corporate reporting initiatives and is intended to be a simple navigational tool. Users of the map should consult source documents for complete framework or standard details and implementation requirements. | | |

| Targeted Towards Companies | Targeted Towards Investors | Framework/Standard | Disclosure Tool |
|---|---|---|---|

| | | |
|---|---|---|
| | [ESG Analytics] | |

ESG Analytics creates platforms that help investors integrate ESG data analysis into their investment process.

| | | |
|---|---|---|
| | [Global Initiative For Sustainability Ratings (GISR)] | |

GISR aims to accelerate the integration of ESG factors in corporate and investment decision making. They accredit sustainability ratings, rankings, and indices on the basis of their alignment with the GISR 12 Principles. Additionally, they operate a public online database of ESG-related ratings worldwide, perform ESG-related research, and convene forums to bring together raters, investors, companies, and other stakeholders.

| | | |
|---|---|---|
| | [Global Reporting Initiative (GRI)] | |

GRI's Sustainability Reporting Standards are one of the world's most widely used standards on sustainability reporting and disclosure. GRI now has a database of sustainability reports from 93% of the world's largest 250 corporations, from 90 countries. In 2015, 7,696 organizations had registered sustainability reports with GRI, comprising 25,075 total reports registered.

| | | |
|---|---|---|
| | [Global Sustainability Standards Board (GSSB)] | |

The GRI Global Sustainability Standards Board (GSSB) is formed of 15 members who have the sole responsibility of setting globally accepted standards for sustainability reporting. The GSSB works in the public interest and according to the vision and mission of GRI.

| | | |
|---|---|---|
| | [Greenhouse Gas Protocol] | |

The Greenhouse Gas Protocol is the most widely used international accounting tool for government and business leaders to understand, quantify, and manage greenhouse gas emissions. The GHG Protocol is a decade-long partnership between the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). GGP provides the accounting framework for nearly every GHG standard and program in the world – from ISO to The Climate Registry – as well as hundreds of GHG inventories prepared by individual companies.

| Targeted Towards Companies | Targeted Towards Investors | Framework/Standard | Disclosure Tool |
|---|---|---|---|

| | | |
|---|---|---|
| | **International Integrated Reporting Council (IIRC)** | INTEGRATED REPORTING <IR> |

The IIRC is developing an international Integrated Reporting Framework. Aimed primarily at long-term investors, this framework will not create new indicators but rather offer guidance and principles for companies on how to integrate financial and non-financial information using existing reporting standards and guidelines, such as those of GRI and the International Financial Reporting Standards (IFRS).

| | | |
|---|---|---|
| | **Impact Reporting & Investment Standards (IRIS)** | IRIS IMPACT REPORTING & INVESTMENT STANDARDS |

IRIS catalogues and provides standards on the most common ESG metrics reported globally. IRIS incorporates and aligns with widely accepted third party standards wherever possible.

| | | |
|---|---|---|
| | **ISO 2600** | ISO International Organization for Standardization |

The ISO is the international standard developed to help organizations effectively assess and address those social responsibilities that are relevant and significant to their mission and vision; operations and processes; customers, employees, communities, and other stakeholders; and environmental impact.

| | | |
|---|---|---|
| | **Principles For Responsible Investment (PRI** | PRI Principles for Responsible Investment |

The PRI is an international network of investors working together to put the six Principles for Responsible Investment into practice. The Principles offer a menu of possible actions for incorporating ESG issues into investment practices across asset classes. There are some mandatory indicators which represent the minimum set of public information that signatories are required to report and disclose from 2013.

| | | |
|---|---|---|
| | **Sustainability Accounting Standards Board (SASB)** | SASB |

SASB provides industry-specific insight on which sustainability factors are most important to companies and most material for investors. Through these industry standards, companies can tailor sustainability initiatives to maximize value, while also disclosing information more effectively to investors. SASB is currently developing sustainability accounting standards for approximately 80 industries in 10 sectors, with the aim to integrate its standards into the SEC disclosure form 10-K.

| Targeted Towards Companies | Targeted Towards Investors | Framework/Standard | Disclosure Tool |
|---|---|---|---|
|  | Sustainable Stock Exchanges Initiative (SSE) | |  |
| The SSE is a peer-to-peer learning platform for exploring how exchanges, in collaboration with investors, regulators, and companies, can enhance corporate transparency - and ultimately performance - on ESG issues and encourage sustainable investment. The SSE is organized by the UN Conference on Trade and Development (UNCTAD), the UN Global Compact, the UN Environment Program Finance Initiative (UNEP FI), and the Principles for Responsible Investment (PRI). | | | |
|  | Task Force on Climate-Related Financial Disclosures (TCFD) | |  |
| The TCFD aims to develop voluntary, consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers, and other stakeholders. The Task Force plans to build on existing work and provide a framework that helps firms to understand what financial markets want from disclosure in order to measure and respond to climate change risks, and encourage firms to align their disclosures with investors' needs. | | | |
|  | Thomson Reuters | |  |
| Thomson Reuters offers a comprehensive ESG database containing information on 4,000+ global companies and over 500+ data points, including all exclusion (ethical screening) criteria and all aspects of sustainability performance. | | | |
|  | Trucost | |  |
| Trucost is a third-party data aggregator that combines environmental data disclosure from other disclosure sources as well as individual company reports. Trucost also provides companies and investors with environmental data estimates for companies who do not, or only partially, disclose their information. | | | |

## Appendix B

### EXAMPLES OF GUIDANCE ON MATERIALITY ASSESSMENTS

#### Accountability[42]


#### IIRC[43]

**The materiality determination process**

10. Determining materiality for purposes of preparing an integrated report involves:
    - identifying relevant matters
    - assessing the importance of those matters in order to determine their ability to substantively influence assessments about the organization's ability to create value over time, and
    - prioritizing the matters identified
    - (hereinafter referred to as the "<IR> materiality determination process").

#### SASB (US focused)[44]

**UNIVERSE OF SUSTAINABILITY ISSUES**

Environmental Capital Social Capital Human Capital
Business Model & Innovation Leadership & Governance

| Evidence of Interest | Evidence Financial Impact | Forward-Looking Adjustment |
|---|---|---|
| Issue frequency in 5 data-driven tests:<br>• Financial risks<br>• Legal drivers<br>• Industry norms<br>• Stakeholder concerns<br>• Innovation opportunity | Issue impact on 4 business value drivers:<br>• Revenue impact<br>• Return on capital<br>• Risk management<br>• Management quality | Issue relation to 3 sustainability principles:<br>• Magnitude<br>• Probability<br>• Externalities |

**PRIORITIZED SUSTAINABILITY ISSUES**

#### GRI[45]

**Materiality**

Principle: The report should cover aspects that:

- Reflect the organization's significant economic, environmental and social impacts, or
- Substantively influence the assessments and decisions of stakeholders

Organizations are faced with a wide range of topics on which they could report. Relevant topics are those that may reasonably be considered important for reflecting the organization's economic, environmental and social impacts, or influencing the decisions of stakeholders, and, therefore, potentially merit inclusion in the report. Materiality is the threshold at which Aspects become sufficiently important that they should be reported.

Source: UNEP

## Appendix C

COMPARISON BETWEEN ISAE 3000 (03) AND AA1000 AS (08)

| Comparator | ISAE 3000 (04) | AA1000 AS (08) |
|---|---|---|
| *Objective of Standard* | The review of anything other than historic financial information | The assurance of sustainability reports |
| *Scope* | Defined and agreed with management.<br>Can include physical or performance characteristics, systems or processes and behaviours | The reporting of organization in relation to global sustainable development.<br>Must include an evaluation of the reporting of stakeholder inclusivity, materiality assessments and the organizations responses to them (Type 1)<br>Can also include assessment of specified performance information (data and claims) which should be defined by materiality (Type 2) |
| *Levels of assurance* | Limited or Reasonable | Moderate or High |
| *Statement* | Written primarily for internal management | Written for all stakeholders. Must include observations and recommendations |

Source: UNEP

## Resources

[1] "Raising the Bar- Advancing Environmental Disclosure in Sustainability Reporting." UNEP News Centre. 2015. http://www.unep.org/NewsCentre/default.aspx?DocumentID=26854&ArticleID=35553.

[2] Morrow, Doug, and Michael Yow. "Measuring Sustainability Disclosure: Ranking the World's Stock Exchanges." Corporate Knights Capital. October 2014. http://www.corporateknights.com/wp-content/reports/2014_World_Stock_Exchange.pdf.

[3] Wim Bartels, Cornis Van Der Lugt, Terresa Fogelberg, and Elisa Tonda. "Carrots and Sticks: Sustainability Reporting Policies Worldwide- Today's Best Practice, Tomorrow's Trends." Global Reporting. 2013. https://www.globalreporting.org/resourcelibrary/Carrots-and-Sticks.pdf.

[4]"LINKAGE DOCUMENTS AND SUPPORTING PUBLICATIONS." Global Reporting Initiative. https://www.globalreporting.org/standards/Resources/Linkagedocuments_and_supporting_Publications/Pages/default.aspx.

[5] "TSC Industries, Inc. v. Northway, Inc. 426 U.S. 438 (1976)." JUSTIA US Supreme Court. June 14, 1976. https://supreme.justia.com/cases/federal/us/426/438/case.html.

[6] Morrow, D., Yow, M., & Lee, B., (2013). Trends in Sustainability Disclosure: Benchmarking the World's Stock Exchanges. CK Capital. http://static.corporateknights.com/StockExchangeReport2013.pdf)

[7] "Investment and Growth from Climate Action." CDP. October 15, 2014. https://www.cdp.net/Documents/policy/investment-and-growth-from-climate-action.pdf.

[8] Krosinsky, Cary. "Newsweek Green Rankings 2011: What Investors Should Know." Newsweek. Accessed October 16, 2011. http://www.newsweek.com/newsweek-green-rankings-2011-what-investors-should-know-68301.

[9] Eccles, Ioannou and Serafeim, 2012, Harvard Business School, National Bureau of Economic Research, Harvard Business School & London Business School: The Impact of Corporate Sustainability on Organization Processes and Performance

[10] "Tomorrow's Investment Rules: Global Survey of Institutional Investors on Non-financial Performance." EY.com. 2014. https://www.eycom.ch/en/Publications/20140502-Tomorrows-investment-rules-a-global-survey/download.

[11] "Report on Progress." UNPRI. 2014. http://2xjmlj8428u1a2k5o34l1m71.wpengine.netdna-cdn.com/wp-content/uploads/2014_report_on_progress.pdf.

[12] Marquis, Christopher, Michael W. Toffel, and Yanhua Zhou. "Scrutiny, Norms, and Selective Disclosure: A Global Study of Greenwashing." *Organization Science* (forthcoming). (Formerly titled "When Do Firms Greenwash? Corporate Visibility, Civil Society Scrutiny, and Environmental Disclosure.") http://www.hbs.edu/faculty/Pages/item.aspx?num=50187

[13] "European Responsible Investing Fund Survey 2015," *KPMG Luxembourg*, 2015. http://www.kpmg.com/LU/en/IssuesAndInsights/Articlespublications/Documents/Brochure-European-Responsible-Investing-Fund-Survey-20150402.pdf.

[14] Junior, Renzo Mori, Julie Cotter, and Peter J. Best. "Sustainability Reporting and Assurance: A Historical Analysis on a World-Wide Phenomenon." *Journal of Business Ethics*, February 2014. http://www98.griffith.edu.au/dspace/bitstream/handle/10072/62040/89276_1.pdf?sequence=1

[15] "Raising the Bar on Corporate Sustainability Reporting to Meet Ecological Challenges Globally," *UNEP News Centre*, November 12, 2015. http://www.unep.org/NewsCentre/default.aspx?DocumentID=26854&ArticleID=35553.

[16] "The KPMG Survey of Corporate Responsibility Reporting 2013: Executive Summary," *KPMG International*, 2013. https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/corporate-responsibility/Documents/corporate-responsibility-reporting-survey-2013-exec-summary.pdf.

[17] "Raising the Bar on Corporate Sustainability Reporting to Meet Ecological Challenges Globally," *UNEP News Centre*, November 12, 2015. http://www.unep.org/NewsCentre/default.aspx?DocumentID=26854&ArticleID=35553.

[18] Druckman, Paul. "Integrated Reporting on the Rise." *The International Academy of Management: Contributing to the Advancement of the Science and the Art of Management* No. 10, November 2015. http://theiaom.org/wp-content/uploads/2015/11/THEIAOM-Newsletter-10-druckman-article.pdf.

[19] "Tomorrow's Investment Rules 2.0," *Ernst & Young LLP.* http://www.ey.com/Publication/vwLUAssets/EY-tomorrows-investment-rules-2/$FILE/EY-tomorrows-investment-rules-2.0.pdf.

[20] "Creating Value: Value to investors," *Integrated Reporting <IR>.* http://integratedreporting.org/wp-content/uploads/2015/04/Creating-Value-Investors.pdf.

[21] "Point of View: Integrated Reporting, Going beyond the financial results," *PwC,* August 2013. https://www.pwc.com/us/en/cfodirect/assets/pdf/point-of-view-integrated-reporting.pdf; "Trends in Sustainability Disclosure: Benchmarking the World's Composite Stock Exchanges," *CK Capital*, June 2012. http://www.pwc.com/us/en/cfodirect/publications/point-of-view/integrated-reporting-pov.html

[22]"Trends in Sustainability Disclosure: Benchmarking the World's Composite Stock Exchanges," *CK Capital*, June 2012. http://www.sseinitiative.org/data/publications/