

Nicholas Institute for
Environmental Policy Solutions

Environmental Impact Investing in Real Assets: What Environmental Measures Do Fund Managers Consider?

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Review

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SUMMARY

As concerns over climate change and natural resource depletion grow, investors have begun seeking opportunities for generating both market-rate financial returns and quantifiable environmental gains. Investing with the objectives of social or environmental return is often referred to as impact investing. Measuring and reporting the environmental impact of such investing is becoming of greater interest to environmental managers and investors.

This report presents findings from interviews of investment fund managers of environmental real assets—defined here as real assets that rely on ecological systems to generate cash flows (e.g., timber, agriculture, fisheries, water rights). The survey reveals little consistency in how environmental returns are measured and reported. Importantly, most of the environmental metrics are not designed to allow for evaluation of funds' environmental performance. Hence, investors are unable to distinguish among funds in terms of environmental returns. Moreover, investors are also generally uninterested in such information. In short, impact investors seek environmental impact funds so long as they have risk-adjusted, market-rate returns regardless of environmental performance.

To better evaluate the environmental returns of impact investments, whether real assets or other types of investments, fund managers and investors should directly engage the environmental science and operations management community. That community could offer insights to help ensure that investments are delivering and reporting on promise and that capital is being steered toward effective projects and opportunities.

INTRODUCTION

Private capital investors have begun including environmental goals as explicit investment objectives, seeking opportunities to generate market-rate financial returns along with environmental returns. Investing with environmental objectives is often referred to as *impact investing*. Measuring and reporting the environmental impact of such investing has been of growing interest to environmental managers and investors, particularly with respect to the types of metrics used within and across investments or asset types, the identities of the entities conducting and receiving metrics reporting, and reporting methods.

This report presents findings from interviews of investment fund managers of environmental real assets—defined here as real assets that rely on ecological systems to generate cash flows (e.g., timber, agriculture, fisheries, water rights). Although funds that include such assets are not always identified as impact investment funds, their investments have quantifiable environmental metrics and reflect environmental performance on financial returns. However, such funds may or may not report environmental returns as a return on impact investing. In fact, how such funds report environmental returns provides insight into how impact investing generally can, or at least could, report environmental measures and metrics to audiences focused on financial returns from capital investment.

The survey results indicate little consistency in how environmental returns are measured and reported. Importantly, most of the environmental metrics are designed for the purpose of reporting rather than for allowing evaluation of fund environmental performance. That is, fund managers and investors appear to be more interested in reporting of environmental returns than in actual performance. Current measures and evaluation approaches are typically binary: funds are rated as environmentally sustainable or not environmentally sustainable; their rising or falling performance over time is not rated. Hence, investors are unable to distinguish among funds in terms of environmental returns.

Importantly, investors are also generally uninterested in such information. Once they apply some level of environmental scrutiny in making an initial investment decision, they neither request nor require a lot of environmental information afterward—a reality reflecting their disinterest in or unwillingness to compromise financial returns for environmental returns. Despite substantial rhetoric regarding alternative sources of capital for environmental resources, the survey presented here shows that investors (particularly high-net-worth individuals) are not sources of concessionary capital for environmental impact funds. In short, impact investors seek environmental impact funds so long as they have risk-adjusted, market-rate returns regardless of environmental performance.

To better evaluate the environmental returns of impact investments, whether real assets or other types of investments, fund managers and investors should directly engage the environmental science and operations management community. That community could offer insights to help ensure that investments are delivering and reporting on promise and that capital is being steered toward effective projects and opportunities.

ENVIRONMENTAL IMPACT INVESTING

Emergence of Environmental Impact Investing

As concerns over climate change and natural resource depletion grow, investors have begun seeking opportunities for generating both market-rate financial returns and quantifiable environmental gains. Investing with the objectives of social or environmental return is often referred to as impact investing.

Much confusion surrounds *impact investing* and related terms. *Sustainable and responsible investing* (SRI) refers to a decades-old trend of divestment from sectors raising environmental, social, or governance (ESG) issues, such as fossil fuels, nuclear power, weapons manufacture, and government bonds held in countries with significant ongoing social or civil matters. The ESG lens can be applied to investment types and asset classes (US SIF 2016). As of 2014, some \$6.57 trillion was estimated to be invested using SRI principles, and globally 22% of total managed assets were thought to employ a sustainable investment strategy in some form (GSIA 2013). Another framework, backed by a United Nations governance system, for ESG considerations is principles for responsible investing (PRI); signatories believe that incorporating ESG governance factors into investment decisions positively influences their ability to attract capital and increase their portfolios' performance (PRI 2016).

The term *impact investing* dates back to 2008 and implies the creation of environmental or social returns alongside financial returns (Greene 2014). It could be argued that all businesses and investments have environmental or social impact, whether good or bad. Impact investing specifically implies positive intended results as reflected in the Global Impact Investing Network's (GIIN) identification of three impact investing characteristics:

- Generation of positive non-financial returns as a result of invested capital is intentional.
- Investment returns range from capital returns to concessionary returns (below market rate) to risk-adjusted, market-rate returns.
- Impact is measured and reported, allowing for transparency and accountability (GIIN 2016).

Intentional investing, the first characteristic, has been driven by macro trends in the financial, geographical, and socio-political landscape. For instance, a growing number of investors are looking to make an impact with their capital: more than 70% of Millennials (those born between 1980 and 2000) view their investment decisions as a way to express their environmental and social mission. Similarly, the growth of regulatory-based market approaches to achieve environmental goals (e.g., carbon trading, water markets, compensatory mitigation) create investment opportunities in environmental markets (e.g., forest restoration for carbon credits). In short, policies are increasingly creating opportunities for impact investing. Finally, in recognition of the growing desire for intentional investing, models for partnerships among NGOs, financial institutions, and philanthropic capital providers are emerging to align incentives (e.g., creation of NatureVest as an investment manager within The Nature Conservancy).

Financial *and* environmental return, the second characteristic of impact investing, can be conceptualized along a continuum (Figure 1). At one end of the spectrum, the goal is decreasing risk factors by incorporating ESG screens into an investment that provides competitive financial returns; the primary goal remains competitive financial returns, achievement of which is enabled by ESG considerations. At the other end of the spectrum, the goal is making mission-driven with investments that are comparatively high risk and that provide returns that simply preserve wealth at a point just short of philanthropic giving. This willingness to lose capital yet generate ESG returns reflects an important change in how ESG-related activities are funded, that is, through finance and investment rather than pure grant funding alone. Although high-risk approaches are somewhat similar to philanthropy, the desire for some economic return marks an important pivot in the financial landscape of environmental funding.

Figure 1. Impact investing spectrum from conventional investing to impact investing and impact philanthropy



Source: Adapted from Sonen Capital (2017).

Measuring the Impact of Impact Investing

Measurement and reporting of the impact of investments is, or should be, of interest to environmental managers, because it implies a measurement process and metrics associated with the environmental outcomes of management actions. The types of metrics used within and across investments or asset types, reporting methods, and the entities doing and receiving reporting have been rapidly evolving. Ideally, metrics would indicate change and would be comparable across funds; they would not be merely descriptive statistics.

As interest in and the practice of impact investing has grown, research on impact measurement approaches has increased. Although nascent, this research has generally shown that evaluation of impact investing tends to be highly anecdotal in nature (Jackson 2013). Some of this lack of rigor of measurement and monitoring (in social and environmental areas) is due to the lack of a theory of change: investors have not specified how the specific project or type of projects will lead to specific (i.e., measurable) changes (Jackson 2013). This lack of a theory of change leads to nebulous goals and, in turn, nebulous results. Some theoretical work has also demonstrated that when the social or environmental goals are unspecified or unclear, investors expect a higher rate of financial return (Reeder 2014).

Impact investors who use measures or metrics tend to fall into three categories (Reeder, Jones, Loder, and Colantonio 2014). System builders attempt to construct a replicable approach to evaluating impact to help them understand how and where an intervention works and to improve their own allocation of capital. Other investors rely on case-by-case approach, focusing on understanding the particular context of a given intervention. Still other investors are evidence followers who believe they are applying well-developed and well-evidenced techniques, making further evaluation of impact unnecessary; renewable energy technology investors are an example of this type of investor—renewable energy reduces carbon dioxide emissions and thus any investment in renewable energy has environmental benefits.

Unlike individual investors, who can fall into any of these three categories, investor networks now largely fall into the system builder category. For example, the Global Impact Investing Network catalogued a system of metrics (IRIS) in an attempt to create a standard language for measuring impact, although its approach provides only standard definitions and acts as a backbone for impact measurement frameworks. Yet even this system and similar tools, including those subsequently developed by GIIN, have seen little in the way of adoption. Tools that have been developed or adopted are largely focused on social impact; tools for evaluating environmental impact investing have been poorly developed and diffused. Because of

lack of measurements and metrics—and wide variability in measurements and metrics that do exist—it is difficult to assess the efficacy of environmental impact investing. In short, whether this new approach to capital deployment is generating meaningful environmental outcomes remains unclear.

ENVIRONMENTAL INVESTORS AND INVESTMENTS

Types of environmental impact investments vary widely. Investments specifically targeting environmental impact may range from investments in energy infrastructure to organic crops to stormwater treatment systems. How these investments are deployed can also take a number of forms, from fixed income to private equity and venture capital to public equity. Finally, the range of investors within the impact sector range widely. Pension funds, foundations, insurance companies, family offices, and high-net-worth individuals (HNWIs) as well as development organizations and diversified financial institutions have either identified themselves as impact investors or have set allocations within their portfolios to invest in environmental real assets.

Types of Environmental Impact Investors

Impact investments are not necessarily identified as such. Investors are any individuals who commit capital with the expectation of a financial return. An impact investor is thus an individual committing capital with the expectation of both a financial return and an environmental return. As used here, an investment fund is a supply or collection of capital from one or more investors used to finance a project, purchase securities, or otherwise commit capital for financial return.

Investors and investment funds have the ability and freedom to self-identify as impact investors and investment funds. A great many funds that are not identified as impact funds intentionally create environmental returns and measure and report those returns (as described below). They exhibit all the characteristics of impact funds, yet continue to operate by choice as conventional funds, often due to marketing and branding objectives. Because impact investment funds reputedly provide environmental returns at the expense of reduced financial returns (see Figure 1), they may attract fewer investors than non-impact investment funds; thus, fund managers may choose to not identify their investment funds as an impact funds.

The variety of impact investors and funds is wide. Institutional investors are typically the largest sources of investment capital, and they typically include endowments, pension funds, foundations, insurance companies, mutual funds, development banks, hedge funds, and sovereign wealth funds. Also typical of institutional investors and funds: their funds are large (more than \$100 million), and they require returns to be consistent and long term. For example, a pension fund must annually generate financial returns sufficient to meet the obligation of retirees dependent on that fund for their income. In the United States, institutions control more than \$25 trillion in capital, representing some 17% of all U.S. financial assets (Funk 2015). Institutional investors typically have a relatively long time horizon for investments and rigid spending requirements. Importantly, institutional investors are increasingly needing to respond to broad societal trends (e.g., ESG responsibility) as well as the desires of those within their organizations; the manager of a university endowment fund may need to respond to students demanding that the fund divest from fossil fuels. Such trends and desires have increased the interest and involvement of institutional investors in environmental impact investing. However, these investors have a primary fiduciary duty to ensure the financial return of their investments so as to fulfill pension obligations and meet their institutions' operational funding or other financial needs.

High-net-worth individuals have also become active in impact investing. Individuals are typically considered HNWIs when the sum of their liquid assets exceeds \$1 million. In 2014, more than 13 million HNWIs represented \$56.4 trillion in capital (Capgemini and Merrill Lynch Wealth Management 2014). HNWIs may invest directly, but family offices are often established for the combined investments or trust of a family or family estate (family office and HNWIs are often used interchangeably). They may also invest through a fund of funds. The objectives of HNWIs are distinct from those of institutional investors: HNWIs tend to focus on asset protection so as to preserve and slowly grow their capital, which they pass along to their future generations or donate through philanthropic efforts. Thus, family foundations often have investment strategies similar to those of the HNWIs that began them. The objectives of wealth preservation may lead HNWIs and foundations to compromise on financial return but only through seeking an overall lower level of risk in their portfolios.

Because family offices and HNWIs have significant input and control over their investments (unlike institutional investors), they are able to include explicit values and non-financial goals for the management of their financial assets. Thus, HNWIs have been considered the most likely source of environmental impact capital. The question (taken up below) is how the desire for wealth preservation (low risk) can be balanced against the desire for environmental impact (see Figure 1).

Because of the relative youth and complexity of impact investing, many investors and fund managers look to investment advisory services for insight, analysis, and advice (Figure 2). Investment advisory firms are comprised of individuals who give advice and sometimes manage the assets of both institutions and wealthy individuals. Their role is to translate investment goals into a recommended allocation strategy and an array of specific investments within each asset type that can work in concert to meet the investor's overall objectives. Advisory services commonly act as a conduit among investors and funds looking to raise capital. As a result, they play a critical role in influencing which specific funds, or types of funds, attract capital from investors. Advisory services can act as a first screen on funds, particularly those with new, unique strategies, such as environmental impact.

Types of Environmental Investment Opportunities

Within investing, there are four major asset classes: equities (stocks), fixed income (bonds), cash and equivalents (money market instruments), and alternative (real estate and commodities). Each of these classes adheres to standards and regulations and has characteristics that distinguish it as an asset class. Environmental impact investments can thus be comprised of different types of assets subject to some type of environmental assessment. Impact investing in public equity (i.e., stocks traded on a public exchange such as the New York Stock Exchange) has increased ESG-related “negative screens” whereby funds of equities exclude investments in tobacco, weapons, disputed territories (e.g., Sudan), or environmental issues (e.g., fossil fuels). More progressive metrics might be used to “positively screen” or increase allocation to companies that have a clear sustainability component. In this niche but growing area, some investments (e.g., Calvert Investments) are developing funds dedicated to meeting investor goals—for example, mutual funds focused on water, renewable energy, low carbon use, and social responsibility.

Impact investing in fixed income—debt-related financing such as bonds—has been an area of innovation. Microfinance bond funds, green bonds, and community development financial institutions funds (CDFI) bonds are all examples of impact forms of fixed income. *Green bond* is the term used for a bond that ties its proceeds to environmentally focused investments. The green bond market has grown dramatically, from just a few million in 2007 to \$36.6 billion by the end of 2014 (CBI 2017). As an example, Unilever issued a corporate green bond (£250 million) to finance adaptation of existing factories to reduce by 50%

waste material, resources use, and emissions (WEF 2014). DC Water’s first environmental impact bond is widely recognized as innovative in tying financial returns directly to environmental returns.

Environmental Real Assets

A less-appreciated type of impact investment is a subset of real assets. Real assets derive their value from their physical properties. Examples of real assets include real estate, timber, precious metals, oil, and infrastructure. Whereas a green bond would represent a contractual claim on revenues generated by an organization owning an asset, real assets represent a contractual claim on the asset itself. Typically, investors include real assets in their portfolios for three major reasons: diversification, inflation hedge, and risk reduction. Real assets help to diversify an investor’s portfolio because they are not subject to the same systemic risk as the broader financial market. Real assets have low correlation with the overall market due to their unique risk-return profiles, isolation from speculation within financial markets, relative illiquidity, and positive correlation to inflation. Currently, the average endowment invests some 50% of its assets in alternative assets, and due to their low risk and high return profile, real estate assets make up the largest proportion of investment by HNWIIs (29% on average in 2015).

Within this asset class, “environmental real assets” are defined here as a suite of real assets that rely on ecological systems to generate cash flows (e.g., timber, agriculture, water rights) and thereby achieve a combination of investment objectives. Many environmental real asset investments derive their value from ecological processes and ecosystem services, yet funds consisting of environmental real assets are not necessarily designated environmental impact investments.

Environmental real assets are often financed through private equity through which an investment fund takes majority control of a company and manages it for a set period before selling it for an appreciated capital value. At the most basic level, private equity can be viewed as a group of investors buying ownership of a firm and then using the firm’s cash flows and sale value to generate a return.

Environmental real asset investing through private equity has been developed over the past 30 years and has begun to be viewed as a form of environmental impact investing though not often designated as such.

Timber Funds

Some of the earliest private equity environmental real asset funds took form as timberland investment funds in the mid-1980s. During that time, many forest product companies were selling large tracts of their land due to changes in tax policy and the realization of forest product companies that the overhead associated with owning and managing forests was not worth the vertically integrated control (Fu 2012). Many institutional investors, looking for ways to hedge inflation, have made direct investments into timberland but through private-equity-style funds with experienced forest managers—timber investment management organizations (TIMOs). As of 2015, there were 770 timber investment companies in 74 countries, owning a total of 246 million acres of forest, approximately the area of Texas and New Mexico combined (Cubbage et al. 2014).

There are also hybrid funds that invest in an array of real assets, including timber. Some large timber organizations are adopting Real Estate Investment Trust (REIT) structures, but these structures should be considered financial assets rather than real assets due to their liquidity and share structure. Timber has a long history of positive financial returns and low correlation to market trends, and it has attracted a range of investor types, most typically large and sophisticated institutional investors.

Agriculture Funds

The private equity model is now also being applied to agriculture with some 33 funds raising \$8.5 billion as of 2015. Some of these funds are housed within very large insurance companies and banks; some are farmland-specific niche funds. Though small relative to global farmland ownership, this class of environmental real assets is gaining momentum as an attractive investment strategy for institutions given the steady cash flows and inelastic demand for agriculture. In a few cases, agriculture private equity funds have explored sustainable agriculture funds as a way to attract impact investors: funds would be used to purchase farms and operate them in specific ways (e.g., make them organic, use low amounts of chemical fertilizer, practice alternative crop rotation), generating a return for investors and shifting agriculture practices in the process.

Since 2008, dedicated emerging market private equity agriculture funds have done \$6 billion in deals, raising \$2.5 billion of capital in 2014. The Teachers Insurance & Annuity Association (TIAA)—the largest U.S. pension fund—alone manages \$487 billion in farmland around the world, making it one of the largest farmland investment managers (Bergdolt and Mittal 2012). Agriculture funds employ two primary models: own to lease or own to operate. Funds that own to lease tend to invest in relatively large amounts of acreage suitable for corn, soy, or wheat and then rely on steady cash flows from annual lease income, possibly also sharing in crop revenues. Own-to-operate funds manage the farms, employing high-efficiency growing practices or growing superior crops to make higher returns than other farms. Over the last 20 years, returns from row-crop agriculture have ranged in the mid-teens; one study estimated a 10-year annualized return of 17.57% from both annual income and land appreciation (*Economist* 2015). Given that institutional penetration of global farmland is less than 1%, growth in private equity agriculture funds is likely to be significant.

Water Rights Funds

A handful of private equity funds are beginning to turn to water rights as an investment opportunity. Most follow the same model as agriculture funds—buying and managing farmland to control the underlying (and separable) water rights. Water-related funds typically modernize the farms to continue agricultural production while reducing total water use (e.g., through lining of canals, drip irrigation, crop switching). This strategy allows annual cash flows to come from agricultural production as well as from leasing of water made available through conservation programs or fallowing. The investment theory behind water funds is that, over their lifetime, the value of water will increase, allowing the funds to eventually sell the land and water at a high rate of return as their exit strategy. In the United States, opportunities to directly invest in water are limited; they are more available in Australia. Water private equity funds are too nascent for data on returns.

Fisheries

Fisheries are in their infancy as an investable real asset. The objective of impact investing in fisheries is typically transitioning to a sustainable fishery through creating investable and exchangeable fish catch permits in an associated market. Under this model, permit prices reach equilibrium when fisherman buy the permits and pass the cost (associated with increasing sustainability) to the entire fish value chain accordingly. Because fisheries are an emerging asset, no historical performance data are available. Moreover, support from the NGO community is needed. Sustainable fisheries have not yet reached a level of risk-return suitable to most investors (i.e., they remain on far right end of spectrum in Figure 1). Marine capture fisheries contribute \$270 billion to the global food value chain (EDF 2015), and sustainable fisheries (and related impact investing) could grow tremendously.

Wetland Mitigation Banks

Wetland mitigation banking is the creation, enhancement, or preservation of a stream, a wetland, or both for the purpose of offsetting adverse impacts to other similar resources. Wetland mitigation banking is effectively an impact/offset system for a specific type of ecosystem—wetlands. The creation and permitting of a mitigation bank creates compensatory mitigation credits, which are sold to states, municipalities, and developers for the subsequent adverse effects of activities such as road construction and real estate development. Because it relies on regulations to create value, a mitigation bank is unlike the aforementioned private equity-based environmental real assets, with the exception of fisheries. However, because mitigation banks typically include ownership of the land underlying the restored ecosystem, they are considered environmental real assets. An important distinction is that the “commodity” created by mitigation banking is a mitigation credit (or offset), earned when the restored ecosystem meets a set of criteria established by regulatory agencies. Thus, evaluation of environmental impact is explicit through regulation. Regulation and environmental uplift are operational hurdles or thresholds for participation in the marketplace, not additive characteristics.

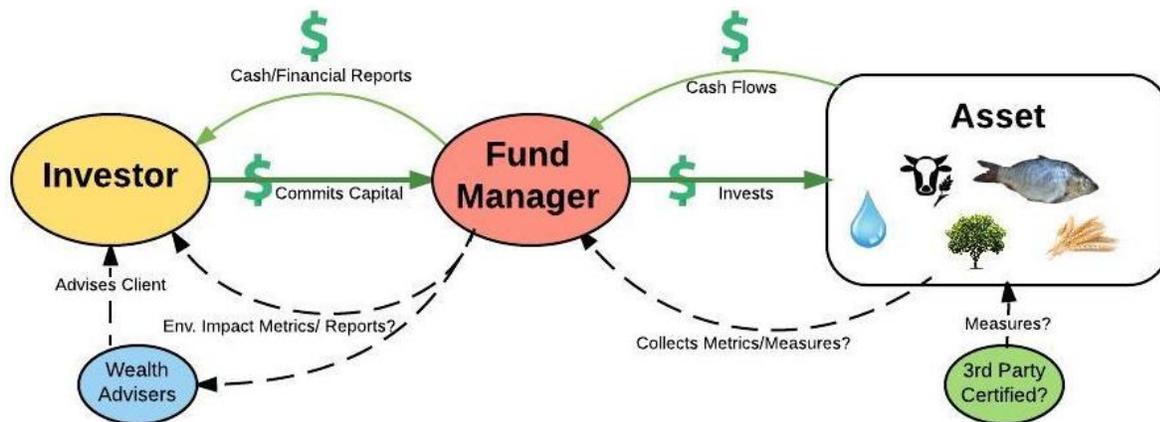
Mitigation projects are financed in a variety of ways, including syndicated private funding, private equity funding, and bank debt. Financial returns depend on the size and geographic market of the bank, and they can range from competitive market-rate returns in the mid-teens, to two or three times the investment. The number of mitigation banks in the United States increased from 46 to more than 1,800 over a 10-year period ending in 2013 (U.S. EPA 2015). Other offset markets such as water quality trading and endangered species habitat banking are also starting to emerge, and growth in these markets is expected to continue alongside that of traditional wetlands market.

Purpose and Overall Approach of Research on the Environmental Impact of Investments

Measuring the actual environmental impact of an investment is not straightforward. Although financial metrics are clear—internal rate of return, net present value, and so on—the environmental return is often far less clear. Although metrics for environmental return have been developed, they are inconsistent in approach and application, and therefore do not allow an investor to compare environmental returns of multiple funds. Therefore, fund managers may be using a variety of tools and approaches to distinguish their fund from others in an attempt to attract capital to impact funds as well as to assess their fund’s environmental returns.

The research presented here is aimed at shedding light on what metrics fund managers use, why they are or are not using environmental metrics, how they are presenting information on environmental returns to potential and current investors, and what types of environmental information investors expect from fund managers (Figure 2).

Figure 2. Fundamentals of environmental real asset investing



Note: Research questions are indicated by dotted lines. Direction of cash flow is indicated by arrows.

RESEARCH METHODS

This research focused on environmental real assets—a growing area of environmental impact investing but largely unrecognized as such, leading to adoption of few explicit evaluation approaches and allowing investors and fund managers great flexibility to choose their metrics and measurements. Within environmental real assets, the research further zeroed in on assets that vary in establishment, investor type, duration, and return: timber, agriculture, fisheries, water rights, and wetland mitigation banks. Among the survey recipients are two non-profit organizations whose responses, where appropriate, are included with or distinguished from the responses of the other survey recipients, which are privately held and managed organizations and funds.

The methodology primarily consisted of survey interviews with personnel cognizant of investment strategies and associated environmental metrics; these individuals included fund managers, presidents and CEOs, and sustainable/responsible investing managers. Questions were designed to reveal how funds use environmental metrics, why these metrics are recorded or not recorded, how they are reported and to whom, and what role investors have in their recording and reporting. Interviewees were asked to answer questions subjectively on behalf of the fund—that is, that anything said be in reference to fact and not based on opinion. The survey questions generally fell into three categories:

- **Investors:** What trends are fund managers seeing among their investors? What are the fund’s investors requesting in terms of metrics, communications, and investment screening? What are the differences in return and impact expectations among different investors?
- **Metrics:** What metrics do funds use to measure impact? Are there any standards, processes, or certifications that funds employ? What motivations do funds have for collecting or not collecting metrics? How are metrics used to communicate to investors or manage the asset? How do you see your metrics changing over the next 10 years?
- **Funds Investing in the Asset:** How is the fund marketed to investors? How does the fund screen deals in the deal pipeline for environmental impact? Are there other leading funds in the space and if so what are they doing? Are some funds more impact than others or is there segmentation that assumes trade off in impact and return?

Interviews were assessed for disparate and uniform trends in key areas of interest, aggregating the data based on investor type, fund structure, asset class, investment thesis, and investor type. Because of the proprietary nature of much of the information gathered, the data have been aggregated and anonymized.

RESULTS AND DISCUSSION

Four major findings emerged from the survey. First, despite early efforts to standardize metrics of environmental impact, disparate metrics within and between asset types led funds to compete on the basis of environmental accounting and reporting efforts rather than actual environmental performance—that is, *whether* they reported was more important than *what* they reported. Second, various forces motivated funds to measure environmental outcomes, and these could be internal forces or external forces, although self-identification as an impact fund or a conventional fund did not correspond to environmental accounting efforts. Third, investors influenced what environmental measures were provided by funds, but funds also used third-party investment advisors to interpret environmental impact. Finally, many third-party investment advisors did not have the environmental expertise to determine the highest environmentally performing funds and thus direct capital toward them. Though presented individually below, all four results are closely linked and shaped by similar forces within environmental real asset investing.

Variation among Environmental Metrics

There was little uniformity in the metrics funds employed, both across and within asset types. The exception was the uniformity of environmental measures used by mitigation banks (described below). However, there were strong links between motivations to collect environmental performance data and the metrics used. Three major categories of metrics were used:

- Environmental metrics that are required by a *regulating* body
- Voluntary *certifications* that require proof of performance using specific metrics and parameters
- *Voluntary* metrics used to achieve mission-oriented, performance, or marketing goals.

No metrics cut across all asset types, and even within asset types there was little overlap (Figure 3). In agriculture, funds were employing very different metric schemes as well as creating their own distinct sets of metrics. One fund was working closely with NGOs to pilot a new index designed specifically for specialty crops, complete with biodiversity metrics in addition to metrics related to the sustainability of carbon, water, and soil. Another agriculture fund, developed through a partnership with retailers, was pilot testing a completely distinct approach and putting considerable effort into tracking soil quality and nutrient loads. As these two specific agriculture funds indicate, in the absence of strict regulation or widely adopted certification schemes, the metrics that funds use vary widely.

Figure 3. Examples of metrics used for each of five surveyed asset types



Many funds elected to subscribe to environmental certifications, such as the Forest Stewardship Council (FSC), the Sustainable Forestry Initiative (SFI), the National Alliance of Forest Owners, USDA Organic, and USDA Good Agricultural Practices & Good Handling Practices (Figure 4). Such certifications are, by nature, voluntary. Funds used such certifications because they are typically accepted as industry standards and because they are relatively easy to communicate to investors. Nearly all of the surveyed timber and agriculture funds employed at least one of these certifications. In the case of agriculture, being certified USDA Organic also allowed one fund to get a higher premium on its crops, particularly specialty and permanent crops. However, certifications provided no points of comparison among funds within asset types and among asset types.

Many of the funds also employed entirely independent, voluntary metrics beyond certifications. Funds typically started by using IRIS metrics, which they adapted to fit the specific nature of the asset or investment. Only mitigation banks, which are required by regulation to collect environmental metrics, used uniform environmental metrics. Regulatory agencies require monitoring reports for mitigation banks, and many employ very similar metrics, typically including assessments of vegetation, soil, hydrology, and geomorphic characteristics. Monitoring for performance allows for participation in the market, but does not lead to differentiation of mitigation funds. Only one fund collected no environmental performance data; in its experience, investors are not asking for such data, making its gathering unworthy the cost or effort.

Figure 4. Distinctions among environmental assets leading to unique metrics and certifications

Asset	Asset Maturity	Regulation	Certification Saturation	Investors	Certification Examples
Timber 				All Types	SFI/FSC
Agriculture 				All Types	USDA Organic/Biologique
Wetland Mitigation 				More Impact & HNW	None
Water 				More Impact & HWN	None
Fisheries 				Impact Only	MSC/ASC

 Strong  Weak

Role of Certifications in Environmental Impact Investing

Certifications are a form of measurement and metric consistently used in both timber and agriculture investments. Within the timber industry, there are four main certifications; FSC and SFI are the most prominent. Within agriculture, four certification schemes are used, all with varying frequency. Interviews revealed that fund managers certify their assets to adhere to industry standards, to gain access to new markets and differentiate their products from other products, to satisfy investor requirements, and to satisfy buyer requirements.

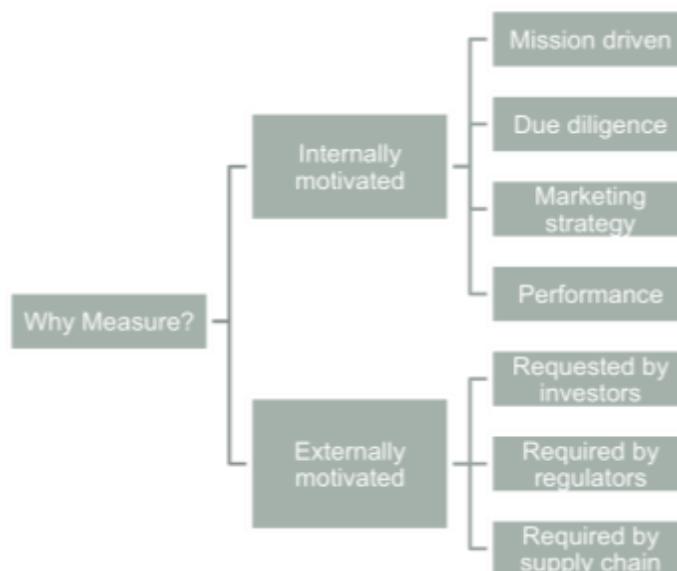
Certifications are industries’ attempts to accomplish two goals. The first is to provide some incentive to meet environmental standards. This incentive provides access to new market segments and allows funds to extract a price premium based on the certification, to obtain social license to operate (as one timber manager stated), or both. In timber and agriculture, certifications are often standard and requisite for attracting capital and remaining competitive. Certified assets comprise upward of 80% of the assets owned by the surveyed funds. A secondary goal of using certifications is to provide some form of standardization of environmental metrics.

The vast majority of certifications are binary—a crop is either organic or not, for instance—and thus lack performance gradation. They indicate only whether investment opportunities exist or do not exist but do not distinguish whether those opportunities offer or do not offer a competitive advantage.

Why Do Funds Measure Environmental Impact?

The specific environmental metrics used by fund managers depended entirely on why funds and managers measured environmental impact in the first place. The survey revealed seven motives, which can be grouped into two categories: internal motives and external motives (Figure 5).

Figure 5. Motivations for monitoring broken-down internal and external drivers



External Reasons to Measure Environmental Impact

In general, not all funds that collect and report environmental data identify or position themselves as impact funds. Although all the studied funds have environmental impacts, only some choose to emphasize those impacts (Table 1).

Table 1. Distribution of funds surveyed as self-identifying as conventional fund or impact investment fund

Funds Interviewed	Total	Timber	Agriculture	Water Rights	Wetland Mitigation	Fisheries
Conventional	10	3	2	2	3	0
Impact	8	4	4	0	0	0
NA/NGO-Supported	1	0	0	0	0	1
Total	19	7	6	2	3	1

Funds that do choose to position themselves as impact funds do so to potentially access certain pools of capital. Many public pensions and endowments have adopted bylaws specifying that some percentage of their capital be allocated to impact investments, for example, mission-related investments. Some funds asserted that entry into this growing niche will prove valuable as investors increasingly allocate capital to impact investments. To tap into this earmarked “impact” capital, funds chose to position themselves as impact funds.

Other funds, in an effort to attract conventional capital, deemphasized environmental impact while emphasizing competitive economic returns. Many conventional funds believe their investors consider economic returns to be compromised by environmental impact. One in particular, a wetland mitigation fund, stated that it emphasizes its market-rate returns rather than monitoring efforts, reporting, and environmental performance. This revelation is particularly significant, because mitigation relies on

verified environmental performance with regulatory oversight of environmental benefits. These opposing beliefs represent a tension among funds wanting to access different forms of capital. It is therefore not accurate to assume that funds positioned as impact funds put more resources or effort into metrics than those positioned as conventional funds.

Mitigation funds are required to provide environmental measures against specific metrics for regulatory purposes. Large portions of operational costs are allocated to monitoring; mitigation funds indicated that monitoring costs comprise between 5% and 20% of full project costs (although these costs also reflect long-term site management requirements). Yet mitigation funds also reported that their investors are not concerned with data from monitoring. Rather than actual data, fund managers provide investors with stories and images to communicate the environmental uplift driven by their investments. Like certifications, however, environmental measures are not used to distinguish one mitigation fund from another. No mitigation fund managers said they collect additional data to demonstrate superior performance of their projects relative to the projects of other funds.

Timber and agriculture funds developed metrics and measurement approaches to respond to investor requirements. Many of these funds have had a history of investment from European institutions, which tend to have rigorous environmental reporting standards. One timber fund noted that one of its Dutch investors required a completed 14-page ESG questionnaire during the due diligence phase. Had this fund not previously measured relevant metrics, it would have been extremely expensive and onerous for it to assemble the environmental information necessary to access that particular source of capital. By establishing measuring processes, the funds were able to compete for European pensions, sovereign wealth funds, and development banks that have detailed, bureaucratic reporting requirements and a higher level of ESG sophistication. These funds were also positioning themselves to tap into capital from U.S. institutions and endowments that are making increasing commitments to positive environmental impact.

Like some institutional investors, HNWI's often had similar demands of fund managers and advisors. Because dealing with multiple HNWI's and fund managers can be arduous for both parties, advisors play a particularly important role. They are increasingly being asked to be environmental intermediaries, not just financial advisors; that is, to ensure that investments are generating sought-after environmental returns or are going to projects and funds that have a track record of or are actively pursuing market environmental performance.

One fund noted this external driver for measuring performance: a requirement of a supply chain partner that producers meet certain standards. In one case, the direct buyer had established sustainability criteria that it imposed on producers. These criteria do not necessarily resemble criteria of the aforementioned certifications, but they do provide a unique insight into the powers of consumers and suppliers of commodity products.

Internal Reasons to Measure Environmental Impact

Many funds collected environmental measurements for purely internal reasons, and in such cases, many of those measurements were not always reported to external audiences. Monitoring and reporting are two separate activities. For competitive advantage reasons, some funds chose not to communicate all their environmental measures. In addition, some managers determined that much of the data they collect are beyond the investors' level of environmental sophistication and concern, let alone interest.

Some funds created their own environmental metrics. These funds expressed the opinion that, in real assets, there was no "one-size-fits-all" schematic that properly tracks key environmental outcomes. There

were a number of reasons funds designed their own metrics, including reflecting unique characteristics of the assets, differentiating their fund from other funds, disallowing direct comparisons of funds, and achieving specific internal goals.

Marketing was also identified as a reason to measure impact. Importantly, and as articulated by fund managers, marketing environmental monitoring is not the same as marketing environmental performance. The former refers to the procedures and metrics used to guide data collection; the second is interpreting the data, recording change, and communicating those findings. Most funds marketed their monitoring procedures and policies rather than their performance procedures and policies. When asked directly, one timber fund manager agreed that investors were generally more focused on the presence of metrics and measurements than in the results and implications of those measurements.

Separate, but closely related, is the internal mission of the fund. The intent of a fund to generate both environmental and financial returns is written into many fund mission statements and was reiterated by managers and advisors. One timber manager said his fund was considered to be a steward of the assets (trees and land), the investments, the company, the earth, and a way of life. Whether or not a fund was marketed as an impact fund, it maintained internal commitments to stewardship and environmental outcomes. For some, this commitment appeared to be for risk mitigation purposes as the outside public and investors continue to scrutinize the environmental implications of growing private capital. For others, the commitment engaged employees, partners, and stakeholders. An internally stated mission of environmental stewardship led these funds to take environmental measures to track their performance against their stated goals.

Some funds measured environmental performance to improve the financial performance of their assets. Particularly for assets in which the environmental health of the resource leads to improved yields, creating a baseline of the environmental condition of the asset prior to fund implementation, followed by continuous monitoring during implementation, helped asset managers operate in ways that allowed both increased financial returns and improved environmental outcomes. For funds with long terms (10-plus years), monitoring helped create value realized on the sale of the asset, particularly for timber and agricultural investments. Other funds sought arbitrage opportunities through data collection and monitoring: by changing management informed by performance metrics, some funds believed they could provide above-market returns to investors.

Funds also collected environmental measures as part of due diligence. Most of the surveyed funds did not say that they use quantitative environmental metrics as a substantive part of their due diligence process, but some use environmental metrics in particular ways. For instance, one fund uses an internal classification (e.g., neutral, light green, dark green) to bucket potential investments on their capacity to create impact and align with the mission of the fund. A timber fund noted that the FSC certification is a good proxy indicator for both risk-return profile and impact. Another fund noted its use of two screenings. First, the asset manager (not the fund manager) qualitatively rates the asset on the basis of past investments and experiences. Second, the fund manager uses an internal framework to ensure that the asset will contribute directly to the stated outcome of the fund. Thus, the fund has specific “impact outcomes” alongside financial outcomes.

The survey revealed a significant gap in environmental accounting expertise of asset managers and those of fund managers/advisors. Asset managers, commonly referred to as operations managers, maintain the day-to-day operations and viability of the asset, for example, the farmland, fishing vessel, restored wetland, or forest. As such, asset managers had a high degree of expertise in natural resource

management. Most fund managers, and nearly all third-party advisors, had little experience working with the environmental real assets they were capitalizing. In many cases, there were significant gaps between the expectations and expertise of the asset managers and those of fund managers, although environmental metrics and measures presented opportunities to develop communication between the two roles.

What Environmental Accounting Do Investors Want?

Fund managers noted that the demands of investors are anything but consistent. Investors of all types are asking for a variety of metrics, forms of reporting, and performance outcomes. Fund managers reported that investors are more concerned with the existence of procedures, metrics, and reports than with the environmental performance illustrated by the data.

Perhaps more interesting than the degree to which investors are concerned with environmental outcomes is the motivation for some investors' interest. According to the fund managers, one of the most environmentally committed groups of investors (in terms of scrutiny of metrics and measures) is European institutional investors. European institutions, specifically German and Scandinavian institutions, are proactive regarding environmental accounting and reporting. Institutional investors in the United States tend to differ in their level of interest in environmental outcomes; some seek sustainability stories and others, quantifiable performance outcomes. However, institutional investors with broad public constituents (e.g., pensions, sovereign wealth funds, development banks) tend to have formalized due diligence questionnaires concerning environmental impacts. State pension funds referred to filling out the questionnaires as "check[ing] the box" in response to stipulations concerning fund allocations. Pension funds, in particular, have a strong driver of fiduciary responsibility associated with their funds and so typically look at environmental real assets through a predominantly financial lens; some have "side boards" associated with environmental sustainability outcomes.

According to fund managers, HNWIs often have widely varying levels of interest in information and reporting, tending to screen potential investments on the basis of commitment to impact. They primarily seek at-market returns, but at the lower end of the risk spectrum. One fund manager suggested that HNWIs like having impact investments as a point of pride, but they have little to no appetite for taking below-market returns from environmental investments. By comparison, family offices (i.e., representatives of collections of HNWIs) are willing to take lower rates of return to achieve environmental impact, but they are not willing to take on additional risk. That is, HNWIs and family offices are not, apparently, sources of concessionary capital for environmental impact funds; they seek impact funds with risk-adjusted, market-rate returns.

Regarding reporting format, HNWIs and foundations tend to ask for environmental metrics as a series of one-off requests regarding the aspects of the environment that are closest to the individual's values or the foundation's mission. In addition, HNWIs tend to want ongoing information (whether that be quantitative metrics or qualitative stories) regarding the environmental performance of the fund in which they invested.

The most consistent finding across investor types is that investors make more upfront requests for environmental information than requests for ongoing performance reporting. They exert some level of environmental scrutiny in deciding whether to make an initial investment decision, but thereafter infrequently request or require environmental information. And thus, little (if any) adjustment of fund allocation is driven by investors on the basis of environmental performance. As one manager put it, "they don't want to take it further... we have a process, and [the process] is often enough for investors."

Nevertheless, interviewees believe that investors are going to become increasingly interested in the environmental components of their investments. According to one fund, foundations in the United States are pushing for metrics as they aim to align their investments with their mission. Multiple funds mentioned that they believe investors will face increasing social scrutiny regarding environmental impact, leading them to ask more sophisticated questions. Other funds recognized the need to move from more qualitative reporting to more metrics-based, quantitative reporting. For many, pictures and stories no longer suffice.

Third-Party Advisors, Certifications, and Industry Leaders

As environmental real asset investing gains momentum as a sub-asset class, the role of environmental investment advisors, certifications, and leaders in environmental accounting and reporting will increase as will the necessary level of environmental sophistication. As more HNWIs, endowments, and foundations come to advisors for help with verifying environmental impact, those advisors will likely have to become even more sophisticated in their analysis of impact. Interviewees voiced the need for greater environmental expertise in capital markets. Generally, the interviewed advisors came from traditional investing backgrounds rather than operations or asset management backgrounds.

There is consensus that investing in real assets, whether marketed as impact or conventional investing, is a competitive field with a diverse set of funds, investors, and advisors. Surprisingly, funds did not identify, much less agree on, a leader in environmental accounting across the industry. A few advisory firms were averred to do the best job. Advisory firms appear to allocate more resources to environmental accounting because they are more investor facing, though often, one degree removed from both the management of the assets and the financial returns. This finding underscores the lack of standardization effort and reveals that funds are not looking to one another for comparison. Again, it could be that although investors would like and benefit from a framework that allows for comparison on the basis of environmental performance, funds are not interested in or incentivized to undertake such comparison.

Nearly all funds have internal and external reports, often highlighting roll-up statistics across funds. Depending on requests from investors and standard procedures, these reports may be made quarterly or annually or on an ad hoc basis. Many, though not all, funds publish a periodic impact or sustainability report highlighting do-good activities and environmental gains. This report largely avoids rigorous quantitative analysis, but rather provides descriptive metrics such as acres under management, number of trees grown, projects completed, pounds of sustainable crop harvested, and so on. Despite their internal measuring and reporting, funds appear to make little environmental performance information public.

So why, when interviewees were asked which funds in the business do the best job of accounting for environmental impact, were there no standouts? Investment, whether of an impact or conventional nature, is a high-stakes game in which information is closely guarded and competition is fierce. The investment industry's confidentiality standards spill into environmental accounting. Funds do make information available to investors and the public. But because of the diversity of metric types, certifications, asset types, geographies, and investment strategies, comparisons are hard to make and thus no one fund stands out.

It may be to the advantage of funds not to have standard metrics and reporting methods. Creating metrics helps drive positive impact, eases interpretation for investors, and allows competition not just on a financial basis but also on an impact basis—but it has its risks. Funds may not produce the type of impact their investors expect, or competition might increase to the point that managers sacrifice financial returns to compete on impact, which may drive away large conventional investors. Or the majority of the impact

capital might go to the top environmental performers, leaving inferior performers starved for capital. Funds are likely to be comfortable using disparate metrics and not being directly compared to one another so that they avoid competing on a truly level playing field.

One manager offered that the impact expertise gap between managers and investors could possibly be filled by advisors, certification bodies, or both. Advisors currently play a large roll in directing capital and interpreting impact. However, there is no clear way to compare advisors on environmental performance, because they are still subject to many of the same shortfalls (lack of standardization and interpretation of metrics) that funds experience, not to mention the cost of monitoring and reporting. Advisors instead rely on the reputation and brand they have built to attract clients and build scale. The possibility that a certification body could establish itself and take on the role of validating, interpreting, and simplifying data for investors is particularly appealing.

There are, however, obvious drawbacks to certifications. Funds have little incentive to exceed criteria or to measure anything not recognized by the certification because doing so would not differentiate them from competitors. Certifications are criticized for “dumbing down” environmental metrics, inherently losing much of the information gathered, and both investors and managers would bear the cost of certification. If done correctly, certifications can accurately inform investors without requiring them to possess high levels of sophistication, and without losing the useful information gathered. Existing certifications, mostly in timber, are threshold certifications, not scale certifications whereby only the number of criteria met are recorded. Threshold certifications can communicate whether a fund meets or exceeds criteria. Certifications and certifying bodies may have the opportunity to communicate impacts in terms that bridge the gap between funds’ capacity to satisfactorily measure and report impact and investors’ capacity to interpret that impact.

CONCLUSIONS AND THE PATH FORWARD

As the environmental real assets investment sector continues to grow, environmental measurement and reporting must advance. Scrutiny by the public and investors alike must continue. Those funds well positioned to demonstrate their environmental performance with well-articulated data will succeed.

The main takeaways of the fund manager interviews are these:

- Despite standardization efforts, metrics vary within and among asset types, leading funds to competing on the basis of environmental accounting and reporting rather than environmental performance.
- Environmental accounting is motivated by various internal or external factors, and self-identification as an impact fund or a conventional fund does not correspond to environmental accounting effort.
- Investors influence what funds measure, and they are increasingly turning to third-party advisors to interpret impact. However, many of these advisors do not have the environmental expertise to identify the highest environmentally performing funds and to direct capital to them.

Standardization both in metrics and reporting format would be beneficial. Because the products of standardization efforts are not gaining widespread adoption, funds must directly engage the environmental science and management community in those efforts. In turn, that community must look

for opportunities to bridge the gap between its expertise and the expertise of investors, fund managers, and advisors.

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Nicholas Institute for Environmental Policy Solutions

The Nicholas Institute for Environmental Policy Solutions at Duke University is a nonpartisan institute founded in 2005 to help decision makers in government, the private sector, and the nonprofit community address critical environmental challenges. The Nicholas Institute responds to the demand for high-quality and timely data and acts as an “honest broker” in policy debates by convening and fostering open, ongoing dialogue between stakeholders on all sides of the issues and providing policy-relevant analysis based on academic research. The Nicholas Institute’s leadership and staff leverage the broad expertise of Duke University as well as public and private partners worldwide. Since its inception, the Nicholas Institute has earned a distinguished reputation for its innovative approach to developing multilateral, nonpartisan, and economically viable solutions to pressing environmental challenges.

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