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Real Assets Primer

Research and Thought Leadership on Impact Investing

San Francisco

www.sonencapital.com

New York

PUBLICATION DETAILS

PUBLISHER

Sonen Capital
50 Osgood Place, Suite 320
San Francisco, CA 94133
www.sonencapital.com

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This report was published in September 2014.

CONTRIBUTORS

Meaghan McGrath
Justina Lai

PROJECT MANAGER

Amando Balbuena

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SONEN CAPITAL

Social & Environmental impact investment management

MESSAGE FROM RAÚL POMARES SONEN CAPITAL FOUNDER



We are pleased to share with you this primer on impact investing in real assets. Our aim is to provide the reader with the basic knowledge and terminology to develop an understanding of the role investments in real assets can play in addressing global environmental and social challenges when approached through an impact investing lens.

Over the past several years, more and more investors have sought the benefits that a real assets exposure can bring to a diversified portfolio. Unfortunately, however, traditional real assets investing tends to be heavily focused on extractive industries such as oil & gas and precious metals or resource intensive activities such as real estate development and conventional agriculture. As a result, investors have, at times, inadvertently found themselves financing environmentally destructive activities.

Increasingly, however, investors are becoming aware of the pressing challenges of climate change and resource scarcity, driving the development of a growing market of sustainable real asset investment solutions. These approaches incorporate environmental and

social sustainability as a way to maximize potential financial returns. Although largely focused on sustainable natural resource themes such as timber, land, agriculture and water management, they also include shifts towards the development of efficient and environmentally-friendly infrastructure such as green real estate, clean power production and waste management.

Our report provides a basic introduction to several of the most common trends in and benefits to sustainable real assets investing today. Emphasis has been placed on describing the overall market, defining key terms used within the industry and providing general approaches for investors to consider.

As with all forms of investing, these are dynamic and ever evolving markets. As such, no report can be considered comprehensive or definitive in content. With this report, we hope to provide you with a basic understanding of the key considerations and invite you to further explore how sustainable real assets investing can play an important role in addressing large scale global challenges.

RAÚL POMARES
Founder, Sonen Capital
September 2014



SONEN CAPITAL REAL ASSETS PRIMER

Real Assets Trends & Benefits

Since the financial crisis in 2008, there has been a growth in interest in real assets investing – in particular, those that generate annual income – as a way to diversify and strengthen portfolios¹. According to Credit Suisse, the contribution to global wealth from real assets has increased 23% (4.8% per annum) since 2008 and is expected to continue to increase at a rate of 5% per annum². The tangibility and long-term nature of real assets investments, together with corresponding current income generation are the underlying value drivers of this asset class and are the foundational characteristics upon which many of the perceived benefits of real assets investing are based. From a portfolio perspective, investing in real assets offers the following five compelling key benefits:

Competitive Total Return Primarily from Stable Cash Flows – Opportunities exist that may offer attractive returns in the form of both regular and predictable current cash flows, as well as long-term capital gains. For example, timberland investments can generate annual dividends throughout the life of the investment from the

sale of timber products in addition to the capital gains traditionally realized upon exit.

Unique Value Drivers – Real assets derive value from the underlying assets themselves, which can be enhanced during times of relative scarcity and by the

1. Travato, Elisa (2012). “Market monitor: Asset allocation trends – Financial crisis catalyst for change in asset allocation.” Professional Wealth Management.

2. Credit Suisse, 2013. Credit Suisse: Research Institute Thought Leadership from Credit Suisse Research.

Real Assets

Real assets include physical, identifiable and non-financial hard assets such as real estate, precious metals, infrastructure, timberland, agricultural land, oil and gas, commodities, etc. They typically include both man-made assets and natural resources and require longer-term commitments as it takes time to develop, enhance and extract the underlying assets.

use of value-add inputs and/or improved operational management. For example, agricultural croplands may realize an increase in value through the addition of fertilizer inputs, which make the property's yield more productive and profitable. Correspondingly, the finite – and sometimes decreasing – availability of productive cropland may also cause an increase in the value of existing properties as well.

Diversification Through Lower-Correlation – Real assets have generally exhibited lower correlation to other asset classes – particularly assets that are sensitive to economic growth – and to each other, offering diversification benefits to traditional stock and bond portfolios³.

Inflation Hedge – Real assets can be used to hedge inflation risk^{4,5}. History suggests that the value of real assets move in line with inflation and tend to retain their value, smoothing out short-term performance volatility, despite large currency fluctuations, principally due to their permanent and physical nature. The current income feature of real assets can also help mitigate currency risk as annual cash flows can allow for currency-conversion-averaging over time⁶.

Downside Protection – Long-lived hard assets, targeted by real assets investors, typically possess tangible and intrinsic value due to their basic utility, which provides a measure of downside protection relative to public equities.

As the investment sector looks to capture the potential benefits offered by real assets, the investable real assets universe – including both investable deals and other sophisticated strategies – is large and growing. Not only has there been an increase in real assets investors, but new strategies continue to emerge, including those that incorporate social and environmental sustainability in an effort to generate “alpha” and enhance returns from real assets.

Sustainable Real Assets

Sustainable real assets strategies share the conventional view that a long-term approach is key to fully realizing the underlying value of real assets while also delivering environmental and social benefits associated with these assets, which can further enhance asset values. Sustainable real assets strategies are particularly well-suited for investment opportunities that deal with natural resources, as they

3. TIAA CREF (2013). The Case for Real Assets. [https://www.tiaa-cref.org/public/pdf/real_assets_0513_summary_r5%20\(3\).pdf](https://www.tiaa-cref.org/public/pdf/real_assets_0513_summary_r5%20(3).pdf)

4. World Economic Forum (2011). The Future of Long-term Investing. http://www3.weforum.org/docs/WEF_FutureLongTermInvesting_Report_2011.pdf

5. Amenc, N., Martellini, L. & Ziemann, V. 2009, “Inflation-Hedging Properties of Real Assets and Implications for Asset-Liability Management Decisions,” *Journal of Portfolio Management*, vol. 35, no. 4, pp. 94-110,38.

6. TIAA CREF (2013). Global Agriculture Investing: No Currency Hedges Needed on the Farm. https://www.tiaa-cref.org/public/pdf/C11996_II_Farmland%20Currency.pdf

SUSTAINABLE REAL ASSETS

Sustainable Real Assets

Sustainable real assets are defined as real assets that incorporate social and environmental sustainability as a way to maximize potential returns. They relate largely to environmental themes including sustainable timberland, sustainable agriculture, green real estate, land and water ecosystems and green infrastructure.

are intrinsically tied to environmental health. In addition to the above conventional advantages of real assets, investment activity in sustainable real assets is driven by the recognition that sustainable management practices are critical to both economic and environmental viability and value creation. This realization is underpinned by a number of deep-rooted, global secular trends related to resource scarcity which, when combined with increasing resource demand – from population growth, urbanization and an expanding middle-class, particularly in heavily populated emerging economies throughout Asia, Africa and South America – drives fundamental market-driven opportunities to incorporate sustainable practices into the natural resource and built environmental sectors. Investors can augment returns by incorporating the following high-level sustainability principles into real assets investing:

- Industries around the world – particularly those dependent on natural resources – are faced with the challenge of reconciling resource scarcity with the growing demand that comes with increasing populations;
- Across industries, environmentally and socially responsible resource management practices can boost worker health and productivity, reduce costs, increase productivity and improve the availability, longevity and quality of natural resource systems well into the future;
- There is a strong and growing consumer demand for products that are produced sustainably and/or certified;
- Infrastructure needs – particularly related to

renewable energy and natural resource management – continue to outpace the public sector’s ability to satisfy them;

- The demand for energy sourced from renewable power is growing and will continue to keep pace with population growth, while public policy (including subsidies, tax credits, etc.) and the regulatory landscapes continue to establish increasingly stringent targets for the creation of renewable energy and emissions standards; and
- Public support and corresponding funds for sustainable natural resource management is growing along with market mechanisms through which impact investors can monetize the environmental benefits created through long-term conservation and restoration efforts.

Many real assets sectors utilize or rely on a wide variety of natural resources, and as such, are critically linked to broader environmental health and quality. For example, productive cropland and agriculture investments rely heavily on soil quality and conservation, as well as the availability and cleanliness of water, amongst other factors. Sustainable investing stresses the importance of incorporating sustainable management practices to enhance the fundamental value of the underlying investable asset. Because of the long-term nature of many real assets investments, they provide a well-matched vehicle for interested investors to convert environmentally and socially sustainable practices – the success of which typically depends on patient capital – into financial returns.

Sustainable Real Assets: A Closer Look

There are a myriad of attractive investment opportunities for investors to generate incremental financial, environmental and social returns when sustainability practices are applied to the following five real assets investment themes: sustainable timber, sustainable agriculture, green real estate, sustainable ecosystems and green infrastructure. This section takes a closer look at the investing landscape where the inclusion of sustainability could serve to improve financial returns and provide long-lasting ecosystem services for an increasingly resource-constrained globe. Although they are described separately, these themes are highly interrelated and investments have cross-cutting thematic relevance. For each theme, we define the investment opportunity, briefly discuss the market and provide an overview of how a sustainable approach can generate not only competitive but also augmented financial returns. The table provided at the end of each subsection serves to summarize what might be included in a typical investment, the overarching investment case, possible investment stages, primary and secondary revenue sources, potential exit strategies and potential measurable impact outcomes. The tables are meant to provide a starting point to educate the reader; an investment in any of these themes can be highly complex.

Sustainable Timberland

Traditional timberland values are dependent on a combination of the value of harvestable trees in addition to other underlying value generators, such as development and mineral rights, rights of access and recreational activities and the value of underlying ecosystem services. The value of the harvestable tree stock is highly dependent on the species, quality and

size of this inventory. High value hardwoods (e.g., maple, cherry and walnut) destined for furniture and other high-quality, value-added products are typically grown in naturally regenerating forests whereas softwoods species (e.g., pine, fir and spruce) are often grown on re-planted plantations, which serve as the core wood for biomass energy pellets and building materials such as structural lumber, among other uses.

Sustainable Timberland

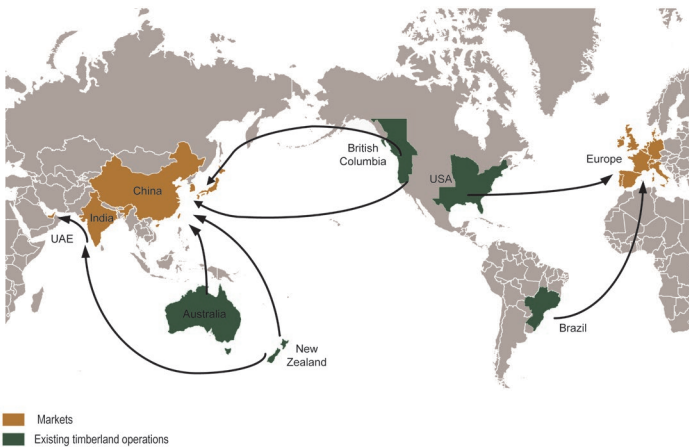
Sustainable timberland includes investment in forestry operations that sustainably grow, harvest, process and/or distribute timber products, such as logs, lumber, pellets, etc. for use in commercial and residential construction, manufacturing and energy production.

Historically, core timber producing areas have included North America – in particular Canada and the Pacific Northwest, Northeast and Southern US – Australia, New Zealand, Scandinavia and Brazil. Sustainable investments in timberland seek to capture value based on traditional timber market dynamics – characterized by a relatively fixed supply of timberland combined with increasing demand from timber hungry and supply-constrained markets, such as Europe (a region lacking adequate timber resources to be self-sufficient), India and China (countries where forest supply and production is not keeping pace with demand) – while also capturing additional value through the implementation of sustainable forestry management practices [See Figure 1].

Institutional investors have historically invested in timberland resources based on attractive realized returns from the current cash flows generated from

SUSTAINABLE TIMBERLAND

Figure 1: **Global Timber Market Trade**⁷



forest product sales (e.g., logs, lumber, pellets, etc.) combined with the sale of subdivisions and non-core properties for higher and better use (HBU) buyers (such as property developers) who are willing to pay premium prices for such properties. Core value drivers for timber product revenues are timber prices, species and product mix, biological growth and forest management, which can potentially either add to or detract from value. Such practices seek to maximize economic value, by optimizing near-term harvestable timber stock, while still maintaining or enhancing the long-term sustainability of these forests and their ecological value. Rather than managing forests to maximize short-term returns, sustainable managers employ good silvicultural practices, such as **pre-commercial thinning and selective harvests** to optimize long-term value. By doing this, forest managers move away from producing many small

Words in bold blue text will be defined at the end of each section

trees to producing fewer large trees, which command greater value [see Figure 2]. Additionally, forests that are third-party certified as “sustainably managed” can realize price premiums and/or ensure greater market interest. Non-timber forest revenues including the sale of non-timber forest products, hunting and recreation fees, **conservation credits** and water and mineral rights can also enhance return streams. Furthermore, sustainable timberland investors can sell **working forestland conservation easements**, which allow timberland owners to continue sustainably harvesting timber, while monetizing other public values inherent in their newly conserved land base.

Timber has generally been an attractive diversification vehicle because of its strong risk-adjusted returns, low correlation to equity markets, opportunities to leverage upfront investment, favorable tax benefits and/or subsidies, inflation protection and market trends that tend to be more stable and longer-lived, as well as counter-cyclical to traditional stock and bond portfolios⁸. This sector is particularly attractive for investors with long-term investment horizons, as it can take decades for trees to grow to an optimally harvestable size. Approximately 20-30 years ago, timberland investing began to gain more traction amongst institutional investors, and eventually attracted high net worth individuals, pension funds, endowments and other interested parties, that make the sector today a widely accepted, desirable asset class and portfolio diversifier. Estimates of the total investable timberland universe are approximately \$160 billion worldwide⁹. Of the \$75 billion worth of investable timberland estimated to exist in

7. Hancock Timber Research Group, 2014. RISI Forest Products and Timberland Investment Conference Proceedings.

8. Weyerhaeuser, Rick. (2005). An Introduction to Timberland Investment.

9. New Forests, 2012. Responsible Investment in the Forest Sector: Recommendations for Institutional Investors http://www.newforests.com.au/news/pdf/articles/Responsible_Investment_in_Forestry.pdf

SUSTAINABLE TIMBERLAND

the US¹⁰, roughly \$7-8 billion would fall into the niche investment category where sustainability is incorporated into investor strategies to maximize economic return¹¹. Table 1 summarizes the potential strategies that are available to investors and the rationale for sustainable timber investing.

Figure 2: Forest Product Market Values

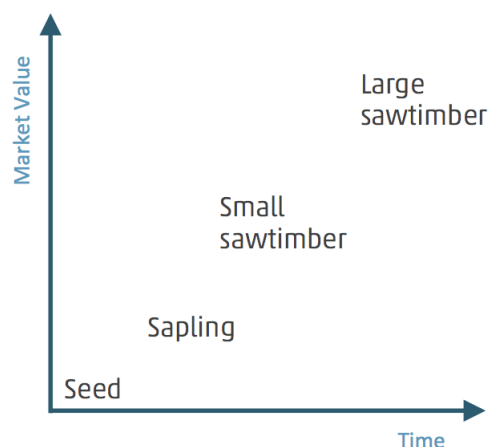


Table 1: Investment Opportunity Summary – Sustainable Timber

Type of Investment	› Investment in a Timber Investment Management Organization (TIMO) or other entity that would purchase plantation or naturally forested land and/or facilities for growing, processing or distributing timber products	
Sustainability Investment Case	› Growing demand for timber products (i.e., from rebounding building markets or biofuel energy) within which the demand for sustainably produced products is high › Environmentally-sound management can maintain and/or enhance timber resources for future use	
Investment Stages	› Sourcing › Planting › Harvesting	› Processing › Distribution
Revenue Sources	Primary › Timber product sales › Sale of assets	Secondary › Hunting and recreation fees › Conservation credits › Non-timber forest product sales
Exit Strategies	› Sale to other forestry investors › Sale to forestry companies	› Sale to developers › Sale to permanent conservation oriented owner such as a land trust or municipality
Measurable Impact	› Acres under conservation easement › Jobs maintained and supported › Number of ecosystem services provided	Certification › Forestry Stewardship Council (FSC) › Sustainable Forestry Initiative (SFI) › American Tree Farm Systems

10. Ibid.

11. Based on information presented in Lyme Timber, 2013. RISI Forest Products and Timberland Investment Conference Proceedings.

SUSTAINABLE TIMBERLAND

Section Definitions

Pre-commercial thinning and selective harvests: The process of pre-commercial thinning and selective harvests involves removing smaller and/or low-quality trees to make room for higher value tree growth.

Conservation credits: Conservation credits are generated through restoration and/or conservation activities, which can be sold to other parties who wish to offset/mitigate their environmental impact elsewhere. For example, real estate developers that damage or eliminate a wetland would seek to purchase wetland mitigation credits from a protected healthy wetland elsewhere to offset the damage caused.

Working forestland conservation easements: Working forestland conservation easements (WFCEs) restrict development on lands but allow income generation from sources such as sustainable timber harvesting, recreational leasing activities and the sale of ecosystem services. On large timberland properties, WFCEs may be sold for between 25% and 40% of the pre-WFCE purchase price.

Timber Investment Management Organization (TIMO): A TIMO is a legal entity that not only provides investors with access to timberland investments, but also manages them once the transaction has been completed.

SUSTAINABLE AGRICULTURE

Sustainable Agriculture

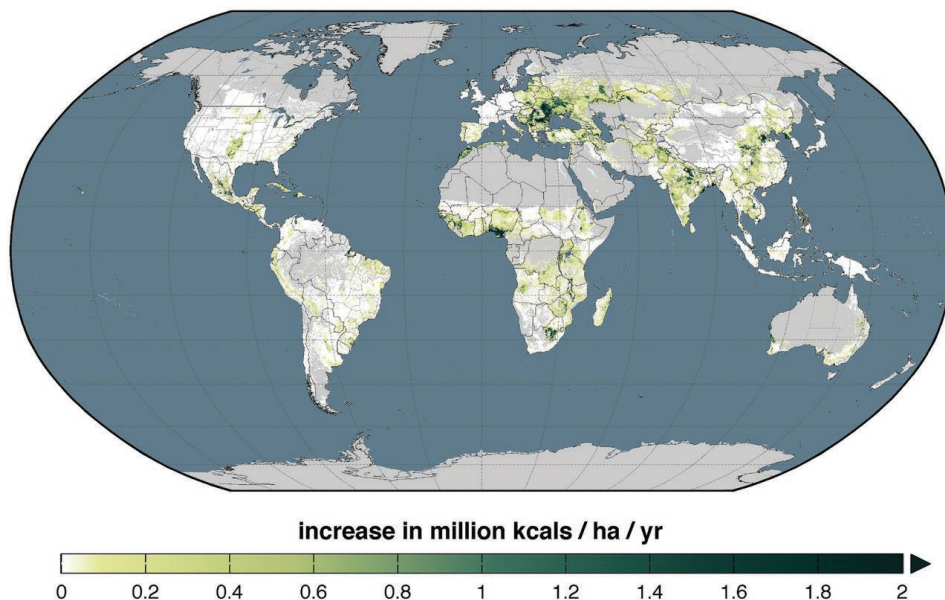
Global population growth, rapid urbanization and a burgeoning middle class, particularly in the emerging markets, together with shifting consumer demand patterns, competing agri-product end-uses and per capita income growth are all fundamentally reshaping the food and agriculture industry world-wide. Improving productivity, access to fertile land and managing resource constraints will be critical to meeting the world's future needs. Globally, arable land supplies are already stressed (and diminishing as land is used for new development) and will continue

to experience increasing pressure as the population and subsequent demand for food grows, combined with greater competition from non-food producing land uses. Estimates suggest that the world must produce 70% more food by 2050 to feed its ever expanding population¹² much of which will have to come from efficiency gains in regions where yields have not yet been maximized. Figure 3 highlights regions where such efficiency opportunities exist to close the yield gap. At the same time, farmland once reserved solely for human food production must compete with the feedstock requirements of other industries, such as biofuels, animal feed, construction

Sustainable Agriculture

Sustainable agriculture investments typically involve the purchase and management of agricultural operations (e.g., farms and ranches) and/or other actors in the broader agricultural value chain (e.g., processors and seed companies) that incorporate sustainability as a basis to generate return.

Figure 3: Increasing Crop Production From Closing the Yield Gaps to 50% of Potential Yields¹³



12. Food and Agriculture Organization of the United Nations (2009). How to Feed the World in 2050. http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf

13. Leverage points for improving global food security and the environment. Paul C. West, James S. Gerber, Peder M. Engstrom, Nathaniel D. Mueller, Kate A. Brauman, Kimberly M. Carlson, Emily S. Cassidy, Matt Johnston, Graham K. MacDonald, Deepak K. Ray, and Stefan Siebert. Science. 18 July 2014; vol. 345 no. 6194 pp. 325-328.

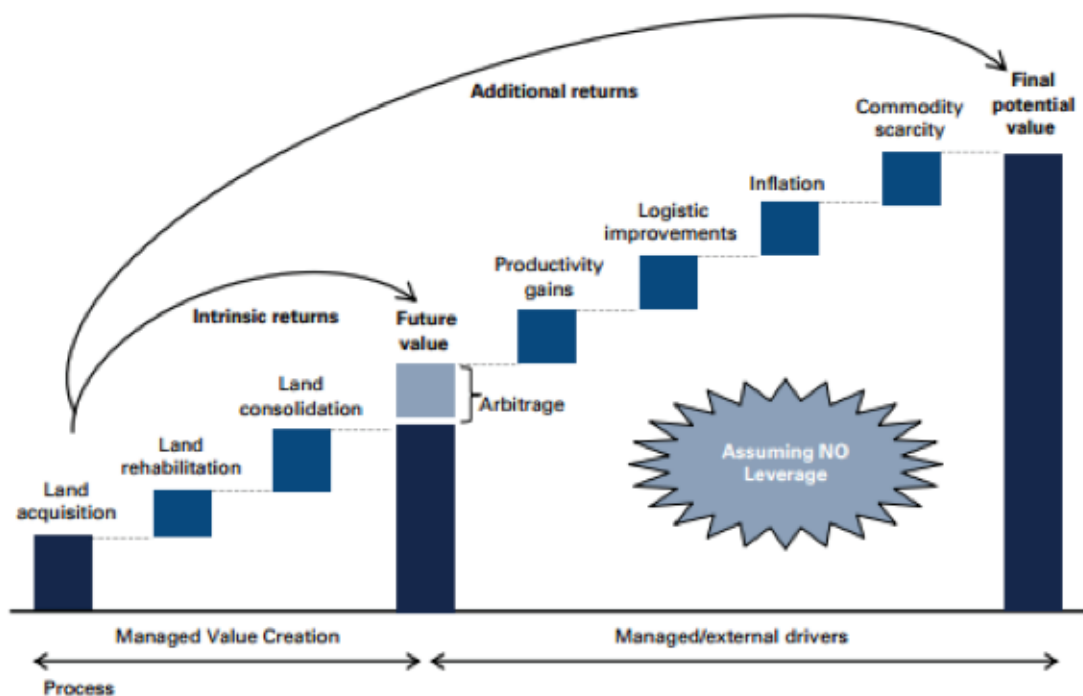
SUSTAINABLE AGRICULTURE

or apparel. Additionally, extreme weather events and the increasing scarcity of crucial resource inputs, such as water, threaten the viability of agriculture as we know it. Developing countries that have seen chronic underinvestment in agricultural infrastructure and risk management around food quality and security in particular, are facing mounting pressure and additional vulnerability from such resource constraints.

In recognition of these market drivers, institutional investors are investing in agricultural real assets with increasing vigor. In the US alone, it is estimated that there is roughly \$300-500 billion of traded investable agriculture¹⁴ land while only \$5-15 billion had been deployed by institutional investors as of 2012¹⁵. By layering sustainability practices onto the key value drivers of agriculture investment [see Figure 4],

investors can improve yield quality and quantity, cut input and operational costs, improve worker health and productivity, increase resource efficiency, protect against certain environmental risks, access alternative revenue streams and/or capture pricing premiums for higher quality products, all of which can deliver competitive returns to investors. Furthermore, for those investors seeking exposure to agricultural markets, real assets investments provide less volatile investment vehicles than public markets. An example of this is demonstrated in Figure 5, which compares the NCREIF Farmland index with the S&P GSCI Agricultural commodity index. Table 2 summarizes the options available to investors and the rationale for sustainable agriculture investing.

Figure 4: Analysis of Key Return Drivers in Farmland¹⁶



14. Oakland Institute, 2014. Down on the Farm – Wall Street: America’s New Farmer. http://www.oaklandinstitute.org/sites/oaklandinstitute.org/files/OI_Report_Down_on_the_Farm.pdf

15. FAO, 2013. Emerging investment trends in primary agriculture: A review of Equity Funds and Other Foreign-led Investments in the CEE and CIS region.

16. Vision Brazil, 2012 as quoted in Luyt, Ian. Emerging Investment Trends in Primary Agriculture: A Review of Equity Funds and Other Foreign-led Investments in the CEE and CIS Region. Rep. FAO, 2013.

SUSTAINABLE AGRICULTURE

Figure 5: Public Investment Returns Have Been More Volatile¹⁷

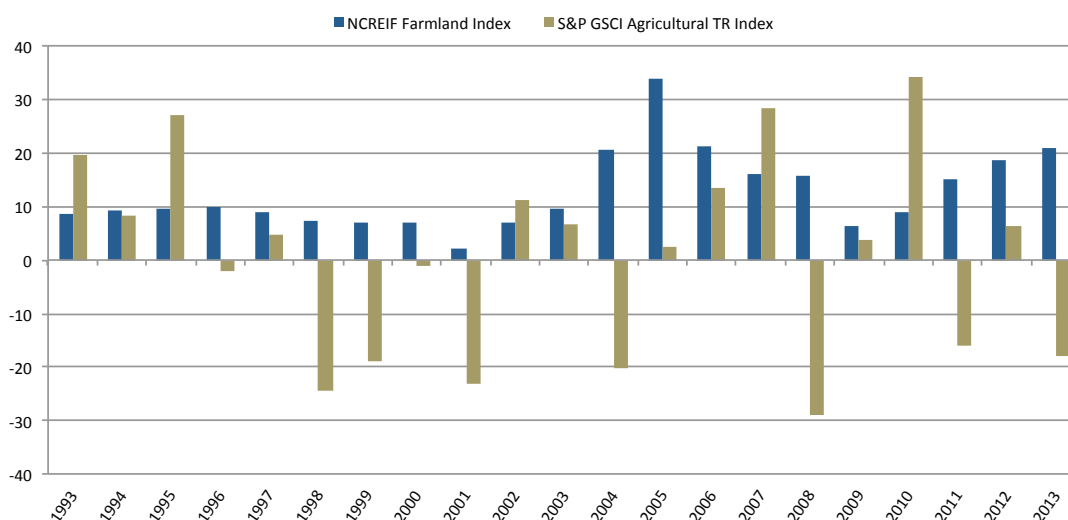


Table 2: Investment Opportunity Summary – Sustainable Agriculture

Type of Investment	› Investment in growers, processors and/or distributors
Sustainability Investment Case	› Environmentally-sound management can reduce costs, improve yield quantity and/or quality and provide access to premium markets › The market for sustainable agricultural products is growing › Responsible management can improve worker health and productivity
Investment Stages	› Planting › Harvesting › Processing › Storage › Distribution
Revenue Sources	Primary › Product sales › Asset sales Secondary › n/a
Exit Strategies	› Sale to another agricultural investor › Sale to large agricultural corporation › Sale to institutional investor
Measurable Impact	› Area cultivated sustainably › Volume purchased from supplier organizations › Jobs maintained or supported › Ecosystem services provided or maintained Certification › USDA Organic › Sustainable Farm Certification International › Rainforest Alliance › Fair Trade › UTZ Certified

17. MPI, Morningstar and NCREIF

GREEN REAL ESTATE

Green Real Estate

Investment opportunities for green real estate are largely driven by global trends in urbanization and redevelopment, as well as regulatory efficiency requirements around increasingly stringent energy efficiency standards and increased consumer demand for sustainable building attributes. Green real estate investments primarily generate value through cost savings and energy efficiency – for example, for heating and cooling systems, lighting, insulation, windows and appliances and solar energy – for both renovated and newly constructed buildings.

Through the incorporation of sustainability principles, “green building” investors may generate higher returns by lowering long-term operating costs and/or charging rental or sale price premiums associated with growing interest in sustainable building markets. As one of the greatest consumers of energy and contributors to emissions, the building sector holds significant opportunity for improvement, which the International Energy Agency (IEA) estimates will require at least \$12 trillion of investment by 2050^{18, 19} indicating that there are substantial investment opportunities in the sector. Furthermore, in 2013, the market value for all Leadership in Energy and Environmental Design (LEED) and Energy Star properties – two of the leading green building certifications in the US – exceeded \$128 billion²⁰. According to a study produced by Maastricht

University and the University of California, Berkeley, LEED or Energy Star certified properties command sale price premiums of about 13% (accounting for property differences and temporal price dynamics)²¹. Investments in green real estate are attractive due to the depth and breadth of opportunities that exist to meet the global needs of future development and growth by incorporating sustainability into the building sector.

Real estate investing, although capital intensive, offers the potential for attractive returns from net cash flows generated during the life of the investment – e.g., from rental revenues – as well as potential upside from property sales. Green real estate operates similarly except that sustainability principles are incorporated into the value proposition from which investors can reduce operating costs, and access premiums and other favorable incentives associated with sustainable real estate practices. Figure 6 shows the various stages involved in a general real estate development deal. Based on many factors including the risk-return profile at various stages of the real estate development process, investors can decide where and when to invest. When it comes to green real estate investing, this decision will depend on whether the investments are targeting retrofits or undertaking new ground-up construction activities, among other factors. Table 3 summarizes the options available to investors along with the rationale for incorporating sustainability principles as part of the green real estate sector.

Green Real Estate

Green real estate investing focuses on activities including the construction, retrofitting and management of energy efficient, low Green House Gas (GHG) emitting, sustainably designed buildings and properties.

18. IPCC 2007 as quoted in UNEP, 2011. http://www.unep.org/greeneconomy/Portals/88/documents/ger/9.0_Buildings.pdf

19. IEA, 2013. Transition to sustainable buildings: strategies and opportunities to 2050. http://www.iea.org/media/training/presentations/etw2014/publications/Sustainable_Buildings_2013.pdf

20. NCREIF, 2014. Sustainable Summary Report: 2013. https://www.ncreif.org/public_files/SustainableSummaryReport_2013.pdf

21. Eichholtz, P. Kok, N. and J. Quigley, 2013. The economics of green building. *The Review of Economics and Statistics*. March 2013, 95(1): 50–63.

Figure 6: General Phases of a Real Estate Development Project²²

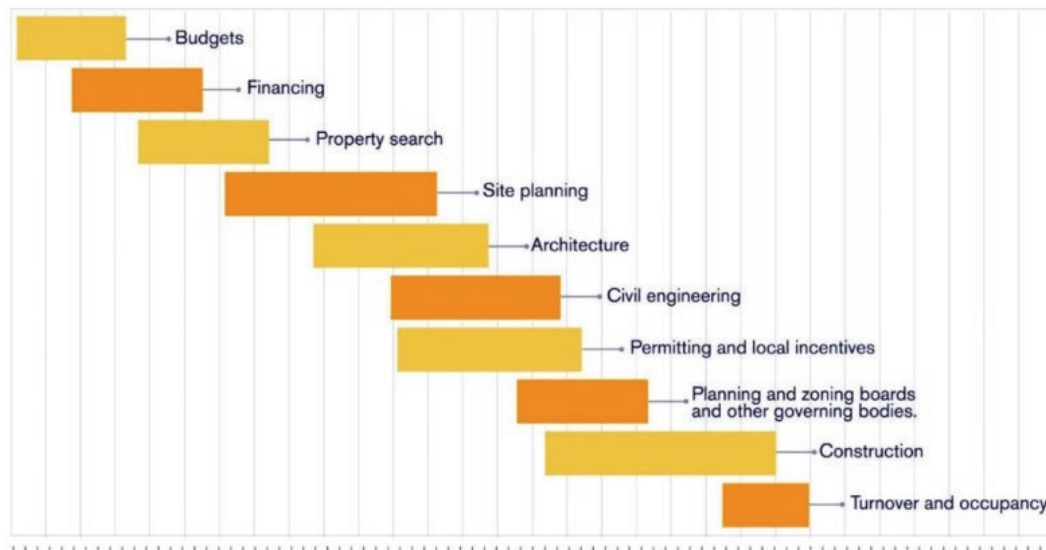


Table 3: Investment Opportunity Summary – Green Real Estate

Type of Investment	› Investment to construct and/or retrofit sustainable commercial and/or residential buildings and properties	
Sustainability Investment Case	› Green real estate accesses growing markets while offering sale price premiums › Increased efficiencies reduce operating/maintenance costs and may generate premiums	
Investment Stages	› Planning › Construction	› Retrofitting › Operations & maintenance
Revenue Sources	Primary › Rental rates › Sale of property	Secondary › Cost savings › Price premiums
Exit Strategies	› Sale to individual › Sale to commercial property buyers	› Sale to REITs or other institutional investors
Measurable Impact	› Energy saved/conserved › Square footage retrofitted with energy efficiency improvements › Percent of properties located in low-income geographies/census tracts or providing services to disadvantaged populations	Certification › LEED › Energy Star › National Green Building Standard › Building Research Establishment Environmental Assessment Methodology (BREEAM)

23. The Mages Group. Web. August 2014. <http://www.magesconstruction.com/development/>

SUSTAINABLE ECOSYSTEMS

Sustainable Ecosystems

Healthy, functioning ecosystems can improve resilience to climate change and are the basis for sustainable water resources and food security²³. When preserved or sustainably managed, landscapes can provide valuable **ecosystem services** that may reduce or eliminate a community's need to build costly infrastructure and water treatment facilities, for example. Investments in high conservation value landscapes, such as wetlands, and/or promote water and land management practices that seek to maintain or enhance ecosystem services can generate financial value as a result of increased production quality and/or quantity, pricing premiums, operating cost reductions and participation in incremental **payment for ecosystem services (PES)** markets. Furthermore, such investments can generate tremendous value through significant and measurable improvements to environmental health and quality of life, on a local and global scale.

Regional land and water conservation markets are expected to grow substantially over the next several decades, driven in large part by economic growth, changing demographic and consumer demands, environmental stress and increasing natural resource scarcity. Exacerbating these existing issues, water

and land resources are becoming increasingly divided amongst multiple competing end-users including industry, agriculture, power generators, domestic consumers and recreational users all of whom are vying for an increasingly scarce resource. It is estimated that, by 2030, 47% of the global population will be living in areas of high water stress²⁴. Land use approaches that serve to regenerate resource availability, such as setting aside key properties to facilitate groundwater recharge, can offer one potential solution to address and limit the effects of resource scarcity.

Globally, the private water market is estimated to be about \$220 billion, and is growing 4-5%²⁵ annually. PES markets continue to develop and mature, creating massive opportunities for investment. The water-focused PES market alone is estimated at just over \$8 billion and expected to grow to over \$11 billion by 2020²⁶. When combined with other PES markets – focused on carbon, biodiversity, marine, etc. – total PES market estimates exceed \$190 billion [see Figure 7]²⁷. It seems increasingly likely that policymakers will continue to attach higher value to the services that ecosystems provide, including flood protection, carbon sequestration and air quality maintenance, encouraging further growth of PES markets. Table 4 summarizes the options available to investors and rationale for sustainable ecosystem-focused investing.

Sustainable Ecosystems

Sustainable ecosystem investments target landscapes with high conservation value and have objectives to:

- 1) protect ecosystems with high conservation value; and
- 2) maintain and/or enhance ecosystem services.

23. UNEP, 2013. Building the Ecological Foundation of Food Security, The Case for Sustainable and Resilient Ecological Food systems in agriculture dominated landscapes in Africa and http://www.unep.org/themes/freshwater/pdf/the_critical_connection.pdf

24. World Water Development Report 2014.

25. S-Network Global Water Indices.

26. Ecosystem Marketplace, 2013.

27. Ecosystem Marketplace, 2013.

SUSTAINABLE ECOSYSTEMS

Figure 7: PES Market Size Estimates²⁸

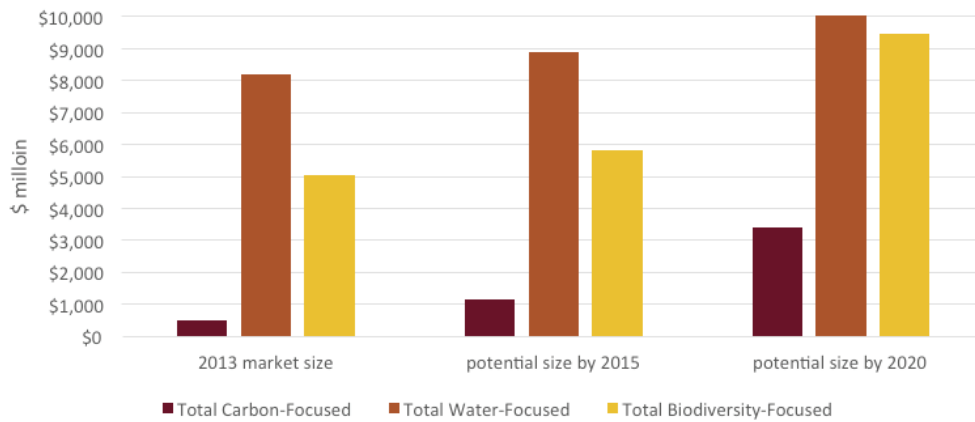


Table 4: Investment Opportunity Summary – Sustainable Ecosystems

Type of Investment	› Investments in high conservation value landscapes to protect, maintain or enhance ecosystem services	
Sustainability Investment Case	› PES markets are growing and becoming more sophisticated thereby offering stable revenue streams › Resource scarcity is driving the increase in conservation land value	
Investment Stages	› Sourcing and feasibility › Acquisition	› Restoration/conservation › Operations and maintenance
Revenue Sources	Primary › Sale of conservation credits › Sale of assets	Secondary › Conservation easements › Hunting and recreation fees
Exit Strategies	› Sale to individuals › Sale to institutional investors	› Sale to public entity
Measurable Impact	› Area of land restored › Ecosystem services provided or maintained	› Area of land under conservation easement

28. Ecosystem Marketplace, 2013.

Section Definitions

Ecosystem Services: Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food, water, timber and fiber; regulating services that affect climate, floods, disease, waste and water quality; cultural services that provide recreational, aesthetic and spiritual benefits; and supporting services such as soil formation, photosynthesis and nutrient cycling²⁹.

Payment for Ecosystem Services (PES): PES refers to the voluntary transactions and incentives offered to farmers or landowners for pursuing agricultural land, forest, coastal or marine management practices that are expected to result in continued or improved ecological service provision beyond what would have been provided without the payment³⁰.

Conservation easements: The Land Trust Alliance defines a conservation easement as “a legal agreement between a landowner and a land trust or government agency that permanently limits uses of the land in order to protect its conservation values. It allows landowners to continue to own and use their land, and they can also sell it or pass it on to heirs.” Conservation easements can cover all or a portion of the property, last in perpetuity and bind future owners to conservation practices. Conservation easements may offer tax benefits as well when they are donated to a land trust and also by lowering the overall development value of the land, thereby reducing real estate taxes³¹.

29. Millenium Ecosystem Assessment, 2005.

30. Food and Agriculture Organization of the United Nations (2007). The State of Food and Agriculture: Paying Farmers for Environmental Services. <http://fao.org/docrep/fao/010/a1200e/a1312e00.pdf>

31. Land Trust Alliance. Web. August 2014. <http://www.landtrustalliance.org/conservation/landowners/conservation-easements>

GREEN INFRASTRUCTURE

Green Infrastructure

The market for green infrastructure is experiencing strong growth driven by both public and private sector demand for renewable energy (e.g., wind, water, solar, **biomass**, biofuels, etc.) improved energy efficiency, **waste-to-energy (WTE)**, waste management and recycling and water infrastructure. In addition, without improvements in energy efficiency and the corresponding rehabilitation of existing infrastructure assets, preferably through renewable sources, neither public nor private finance can address resource scarcity at the levels needed to keep pace with projected global population growth³². The World Economic Forum estimates that infrastructure investments will need to exceed at least \$5 trillion annually to meet the demands of a growing global population by 2030³³. Additional annual investments of \$700 billion would be needed for the investment activity to support a transition to green growth³⁴.

Market demand for power sourced from renewable resources continues to grow globally, particularly in emerging economies, creating attractive long-term opportunities for investors around the world. The IEA estimates that renewable generation alone would require \$6 trillion of investment to keep pace with current energy demand projected to 2035³⁵. This is likely an underestimate as it does not take into account the growing appetite for renewables and associated investment required to

meet increasingly stringent regulatory requirements and still maintain and expand the necessary energy infrastructure to keep pace with population growth. The European Commission estimated that Europe's energy infrastructure alone would require €1 trillion worth of investment for 2011-2020³⁶.

The diversion of waste from landfills to WTE and recycling facilities is also expanding around the world representing additional opportunities for green infrastructure investors. The municipal solid WTE market alone is currently estimated to reach \$29 billion by 2016 driven in large part by the need to upgrade existing and established WTE plants³⁷. As landfills reach capacity and as energy needs increase in step with population growth, there are increasing opportunities to satisfy needs with alternative energy production from waste. Water infrastructure is another area where significant investment is needed. Driven by the constraints on water resources previously described, growing water demand is expected to stimulate an estimated \$22 trillion in global water infrastructure

Green Infrastructure

Green infrastructure investments focus on the construction and/or operation and management of infrastructure (e.g., power generation plants, water pipes, transmission lines, etc.) needed to generate and/or facilitate transmission and distribution of renewable and recycled resources, including energy, waste and water.

32. McKinsey Global Institute, 2011. Resource Revolution: Meeting the world's energy, materials, food and water needs.

33. World Economic Forum, 2013. The Green Investment Report: The ways and means to unlock private finance for green growth. http://www3.weforum.org/docs/WEF_GreenInvestment_Report_2013.pdf

34. Ibid.

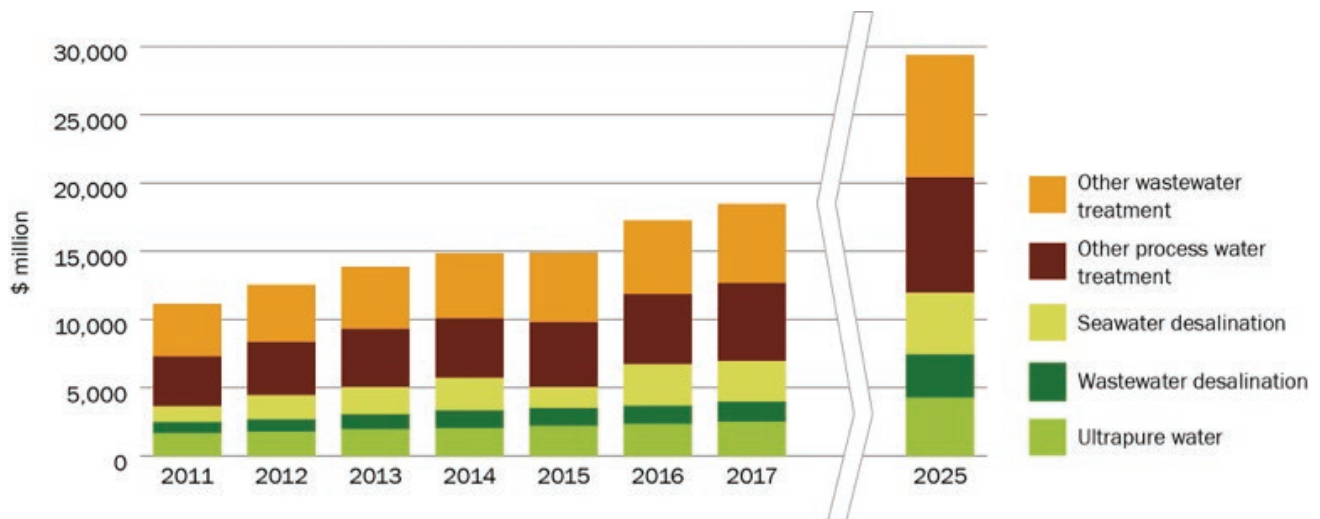
35. IEA, 2014. <http://www.iea.org/newsroomandevents/pressreleases/2014/june/name,72035,en.html>

36. Office of the European Union, 2011. Energy Infrastructure. http://ec.europa.eu/energy/publications/doc/2011_energy_infrastructure_en.pdf

37. Frost & Sullivan, 2013. <http://www.frost.com/prod/servlet/press-release.pag?docid=287665623>

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Figure 8: Industrial Desalination and Water Reuse Market; Global Industrial Waste and Recycling and Services Market⁴⁰



investment over the next few decades³⁸ while the global desalination market is expected to more than double between 2011 and 2025³⁹.

Private sector investors have the opportunity to invest at various phases of the infrastructure project life-cycle all of which have their own risk/reward profiles. Investors must assess optimal opportunity based on many factors, including risk-reward preferences. Those who provide development equity and enter at the project concept or feasibility stage will have a different risk profile than those who choose to invest at a later stage once the facility is fully operational and generating current income. Figure 9 provides an example of how private capital can finance infrastructure projects at various points along the life-cycle of an energy generation project.

In recognition of the critical role private capital can play in meeting infrastructure needs, governments are developing favorable regulatory frameworks

and policy environments to attract private sector investors and make such opportunities particularly lucrative. For example, a French environmental services company recently announced an aqueduct improvement project with the District of Columbia that will generate \$8-12 million in annual cost savings⁴¹. The essential nature of the services provided by infrastructure assets, the scale of investment required and the fundamental improvements in regulatory environments offer a diversity of attractive investment opportunities. Through the incorporation of a sustainability perspective, investors can access growing infrastructure needs to facilitate the generation and use of renewable resources and reduce operating and future maintenance costs, thereby generating enhanced returns based on operating cash flows and/or asset sales. Table 5 provides a summary of the options available and the rationale for investors interested in capitalizing on the opportunities in the green infrastructure investment sector.

38. KBI, 2013. Referencing Jacobs Securities, Global Water Primer, April 2011, referencing Booz Allen Hamilton.

39. Global Water Intelligence 2012.

40. Global Water Intelligence 2012.

41. Bloomberg New Energy Finance, May 2014. <http://about.bnef.com/bnef-news/veolia-sees-more-water-management-deals-in-u-s-cities-ceo-says/>

GREEN INFRASTRUCTURE

Figure 9: Energy Project Development Process⁴²

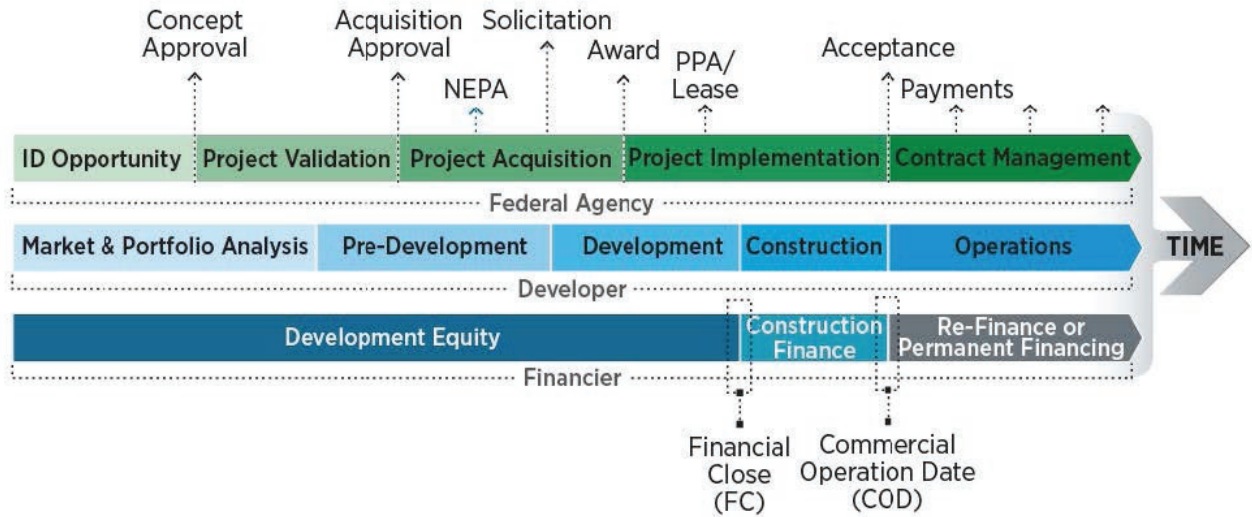


Table 5: Investment Opportunity Summary – Green Infrastructure

Type of Investment	› Investments in construction and/or operation and management of infrastructure needed to generate and/or facilitate transmission and distribution of renewable and recycled resources, including energy, waste and water	
Sustainability Investment Case	› Strong and growing political support, regulatory requirements and consumer demand for recycling programs and clean power, particularly in emerging markets where power can be generated for local use › Extreme infrastructure challenges to meeting the demand for renewable energy, as well as to manage water and waste resources	
Investment Stages	› Feasibility › Permitting › Construction	› Retrofitting › Storage › Operations and maintenance
Revenue Sources	Primary › Fixed payments from end user (e.g., water districts) based on contract (e.g., PPA) › Sale of physical assets	Secondary › n/a
Exit Strategies	› Sale to public user (e.g., utility, water district, municipality) › Sale to another private investor	› Sale to institutional investor seeking current cash yield (e.g., pension funds, insurance companies)
Measurable Impact	› Megawatt hours (MWh) generated through renewable sources › GHGs offset through renewable production › Waste and/or water recycled	Certification › AWS International Water Stewardship Standard › US Federal Water Efficiency Requirements › GHG Protocol Accounting Standard

42. US Department of Energy (2012). Developing Large-Scale Renewable Energy Projects at Federal Facilities Using Private Capital. <http://www1.eere.energy.gov/femp/pdfs/largeregguide.pdf>

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Section Definitions

Biomass: Biomass is made up of organic matter, typically plant-based, that can be burned to produce energy.

Waste-to-energy: Waste-to-energy (WTE) is a form of energy recovery whereby waste is combusted and converted into usable energy in the form of heat or electricity.

Power Purchase Agreement (PPA): A PPA is a legal contract that identifies and commits a buyer to purchase the power to be generated by an energy generation facility at an established price over a given amount of time. Typically, PPAs are made between the company financing the facility and the local utility or energy provider prior to the facility's development as the PPA represents future cash flows to the company, establishes its basis for leverage and serves to de-risk its investment.

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