



Clean Energy USA Finance Guide 2015











Environmental Opportunities

An attractive sector for investment



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Powerful macro-forces centered on rising and increasingly volatile commodity costs and existing inefficient resource management practices, along with certain special attributes of environmental markets, have created openings for the specialist investor to earn top-tier economic returns in the North American environmental opportunities sector. Encompassing energy efficiency, clean energy generation, water resources and reclamation, waste-to-value applications, and environmental services, environmental opportunities for investors are large and growing rapidly, meriting close attention for both growth equity and infrastructure project finance markets.

The macro-forces relentlessly driving more resourceefficient practices in the environmental opportunities industry include:

- 1. high and increasingly volatile commodity prices;
- 2. changing corporate considerations;
- historic investment that laid the foundation for many environmental technologies and businesses today;
- market scaling and evolution in the wake of the cleantech bubble; and
- 5. growing migration of skill and talent into the environmental business sector.

Environmental business markets in North America have been developing rapidly in recent years, notwithstanding the skittishness of investors haunted by painful memories of Silicon Valley's disastrous foray into cleantech investing, the collapse of public equity markets during the Great Recession, and the political stigmatization resulting from partisan battles over environmental regulation, energy policy and climate change. Recent successes in the environmental products and services industry have been showing the way for smart growth equity investors to begin investing with new or renewed interest.

Furthermore, environmental infrastructure has begun to emerge as a new specialized, growing, and generally underexploited sector within the broader US infrastructure market, offering compelling opportunities in the nearterm for the specialist investor to earn attractive economic returns with very low investment risk. This sector sits at the crossroads of infrastructure markets and the environmental opportunities sector. Favorable environmental market trends, in combination with general attributes of both infrastructure investments and specific environmental infrastructure value-drivers, suggests that this is the time for potential investors to look closely at this rising asset class within the broader environmental opportunities sector in North America.



It is worth noting that investing in environmental markets generally yields broader beneficial outcomes beyond attractive economic returns. The societal cobenefits of such investments are can be generally quite significant. For example, air, water and land pollution is increasingly perceived as a major socioeconomic problem by governments at all levels, the public at large and a growing number of business leaders. Similar concerns exist around dwindling freshwater supplies and resultant water stress, and the growing costs and environmental burden of waste management. Thus, improved resource management should lead to many benefits for society, such as cleaner air and water and reduced waste and pollution.

Societal co-benefits aside, the attractive economic opportunities for extra-normal investment returns in the environmental opportunities sector offer appeal to any investor. As resources become increasingly scarce and are priced to reflect this, numerous resource efficiency and resource substitution opportunities are opening up. Many such investment opportunities are purely based on major cost savings available to industry or consumers by substituting more efficient approaches for more costly traditional approaches, which should be a simple sell to the end customer.

Indeed, the environmental business sector (also often referred to as the resource management sector) is so massively inefficient in the US that investors should be able to earn extra-normal market returns—in effect, to "trade up" without needing to "tradeoff." Simply put, no tradeoff need exist between economic returns and societal co-benefits in environmental investing. With many resource management challenges urgently needing to be addressed, environmental markets are rich with opportunities for impactful investing that can deliver strong economic returns while benefitting society in important ways.¹

Environmental Business Markets

Considering the macro-forces driving environmental opportunities broadly helps contextualize and explain the already large, rapidly growing environmental business market, predict continued expansion of selected segments, and highlight opportunities for attractive returns to the specialized growth equity investor.

North America's middle- and lower-middle-market of high-growth companies in the environmental business sector is an attractive investment proposition, specifically companies that are already validated by a market response and have sustainably differentiated products and/or business systems together with a growing sales record and are moving toward full competitive scale.

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Environmental businesses are further advantaged in North America. Against the backdrop of the macro-forces driving environmental opportunities broadly, the "Six Angels" of environmental business markets represent particularly attractive aspects of the market, further supporting the case for investment: (i) environmental business markets are already large and developed and are (ii) experiencing continuing rapid growth; in addition, they are (iii) innovative, (iv) undercapitalized, (v) highly diverse, and (vi) complex. It is not sufficient to recognize the positive elements of environmental business markets. Investors must be able to expertly sidestep the "Six Devils", which can imperil generalist or inexperienced players in these spaces. These risks encompass:

- 1. technology risk;
- regulatory and subsidy risk;
- hydrocarbon pricing risk;
- capital scaling risk;
- 5. foreign competition risk; and
- 6. business scaling or execution risk.

While environmental markets offer substantial opportunities for investors to capitalize on the abovenoted macro-trends if not carefully avoided or mitigated, these significant challenges—the Six Devils—can result in sub-par returns. A specialized firm should be composed of a team that is deeply knowledgeable about the various driving forces, value drivers and risk factors shaping its target markets. Firms with specialized knowledge can better evaluate the validity of the technology that goes into complex products, and they can better interpret subsidies, regulations and practical implications of written laws and environmental agencies. Such expertise is essential in order to maximize investor returns while minimizing downside risk. Non-specialized teams usually suffer from a lack of experience, which a complex market punishes.

The Six Angels advantage the specialist investor who can leverage deep sector knowledge and management expertise to build a portfolio of companies that capitalize on resource inefficiencies in the broader market. Building on the Six Angels, experienced private investors should be able to profitably deploy capital to provide superior economic returns as these companies gain from the tailwind benefits of market growth and concurrently provide societal co-benefits without having to trade-off against economic returns.

The private middle- and lower-middle markets in the environmental opportunities space are made more attractive by opportunities to capitalize and help scale underfunded companies that are advantaged by sector growth trends. Early stage investing remains very risky in these markets, in view of technological uncertainties, the challenges of business scaling, the capital intensity of many environmental businesses, and the advantages held by incumbent players. Likewise, large mature companies usually do not enjoy rapid growth (their markets are more mature and they usually face strong head-tohead competition) and are likely to be fully priced. Both mature public company investing and early stage venture investing leave a "missing middle" opportunity for growth companies to ride the macroeconomic drivers to scale with less risk and higher risk-adjusted returns for investors. The tendency of capital to flow into the early venture stage and late mature stage of this spectrum also contributes to the undercapitalization of highopportunity commercialization-stage companies in the sector.

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In these private middle and lower-middle markets, investors can find high value investments, support the growth of companies, and seek exits at attractive multiples. There are niche opportunities for specialized equity investors to achieve extra-normal returns by focusing on four types of opportunities:

- less asset-intensive, more IP-based, and service plays already NPV positive;
- disruptive technologies where technology risk has been retired but commercialization risk still exists;
- 3. undervalued assets with complex barriers to growth that the investor understands; and
- strong growth plays that are relatively capital intensive vs. where venture investors normally invest.



The following strategies in combination offer rich potential to secure high economic returns in environmental markets:

Invest in market-validated companies. The market indicates when risk is mitigated sufficiently to produce strong customer purchase decisions. Certain more fully developed companies that markets favor have, by that fact, retired many risks, usually including unproven technology and subsidy risk.

Invest in growing companies in growing markets. Invest in rapidly growing companies in high-growth market sub-segments as a means of achieving high returns while limiting investment risk. Investors should preferably invest in companies that are growing faster than the market itself, possibly indicating the presence of a scalable advantage.

Invest in certain downside-protected companies or projects to achieve an overall risk-balanced portfolio. As part of an overall investment portfolio, asset-light companies and projects offer protection against capital scale and business scaling risks, while pre-contracted offtake and feedstock agreements also mitigate risk.

Add value to companies beyond simply providing capital. Providing growth capital and expertise along with control or high levels of management influence allows smart investors to actively help companies move across the Commercialization Gap to full commercial scale, which is a major value creation event.

The favorable interplay of these highlights several attractive market segments in the environmental sector: energy efficiency, clean energy, water resources and reclamation, waste-to-value, and environmental services.² Each of these market segments exhibit ripe investment prospects in the middle and lower-middle markets in North America.

Environmental Infrastructure Markets

Neither renewable energy generation nor clean energy asset finance are new practices, but the recent coalescing of favorable market trends and long-developing dynamics make the environmental infrastructure market an attractive investment space for private equity investors. The emergence of the North American environmental infrastructure segment as an attractive asset class was, in part, stimulated by US government policy that facilitated initial demonstration of success in the market. In turn, this prompted investor confidence in applying project finance to renewable energy and other environmental infrastructure investments.

Capitalizing on favorable macro-forces driving environmental business opportunities broadly and the advantages of infrastructure project finance, the environmental infrastructure market is further propelled by a number of key value drivers: (i) abundant, free or undervalued fuel or feedstock; (ii) proven, de-risked technologies; (iii) investor appetite for risk-mitigated, inflation-protected assets; (iv) investor appetite for current yield; (v) growing demand for lower-cost, stable-priced energy; and (vi) advantageous investment and tax incentives.

These dynamics are showing the way for private investors, particularly as they coalesce in the larger environmental market context of increased consumer interest in sustainability and climate change concerns, positive market and economic forces, and industry development and evolution. These favorable drivers have already successfully attracted significant amounts of private capital to the burgeoning environmental infrastructure industry: in the US renewable energy sector alone, over \$300 billion was invested from 2004-2013, with \$36 billion invested in 2013.³

Renewable energy and other environmental infrastructure technologies have been well understood technically for quite some time, thanks in large measure to longstanding research and development (R&D) efforts in the United States. Even as recently as the mid-1990s, however, renewable energy projects still seemed too unproven—too risky from an investment standpoint. Though the use of project financing for large combined cycle generation plants or other infrastructure applications was widespread, few private investors were eager to finance the "first" solar PV or wind energy projects, partially due to a limited understanding of the resource risk, as well as what was perceived as relatively high capital costs associated with these projects. Energy policy at the federal level, such as the Production Tax Credit (PTC), helped change this view, spurring broader sector development by improving the economics and thus encouraging the development of midsized wind projects into the early-2000s.

With increases in the number of installed projects came better assessments of wind as a renewable energy resource. With the introduction of the federal Investment Tax Credit (ITC) in 2006, private investment in renewable energy projects, particularly in solar projects, began to increase as well. The supportive policy environment at the federal level, along with state-level developments, drove the development of financing mechanisms to take advantage of favorable tax credits, and the renewable energy tax equity market emerged, effectively further encouraging broader private sector interest and participation.

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Overall, the complexity of environmental infrastructure markets, segments, and subsegments provides an advantage to the specialist investor who possess deep sector knowledge and experience.

The project finance market in clean energy developed still further in light of demonstrated success of these initial projects, falling technology costs, better wind and solar resource predictability, and volatile hydrocarbon resource prices. Investors also began to better recognize the potential of project finance in the environmental markets context, particularly for power generation. New federal measures introduced in the aftermath of the 2008 global financial crisis to address the capital limitations of the market also helped spur investments in very large-scale renewable energy projects.

As the market saw the success of these projects, particularly in wind and solar, investment in the sector expanded. Despite lapses in important government incentives after 2011 and other policy uncertainties, which resulted in reduced investment and deal flow in the sector in subsequent years, investment grew to \$40.1 billion in 2013.⁴ Even so, project financing of large-scale wind projects remained relatively strong and steady through 2013. Further, the decrease in large-scale solar project finance investment after 2011 is a reflection of the market's evolution: expanded private investor interest in utility-scale⁵ solar PV, the commercial and industrial (C&I) solar space, and small residential solar sector. Indeed, thanks to market scaling and expanded demand and production, as well as very rapid expansion in Europe and extensive government subsidies in China, many clean energy technologies, particularly wind and solar, witnessed dramatic reductions in their cost structure. As costs declined, private investors began to see the market potential for smaller-scale projects.

Innovation in financing arrangements also continued to play a role in the sector's development by expanding profitable investment into the residential solar sector, such as third-party lease agreements, consumer creditbased financing, and securitization. In addition, other financing innovations, like "YieldCos," have contributed to the expansion of the universe of investors in the space. Beneficial tax and investment policies and related financing structures, along with growing comfort and track records of success in the environmental infrastructure sector, are helping to build a robust public secondary market for environmental infrastructure assets, attracting investors who are seeking substantial liquidity. Thus, environmental infrastructure assets can be surprisingly liquid and, while having the potential to yield stable cash flows over the long term, most do not require the investor to engage in a longterm hold of the assets before a liquidity event.

The complexity of environmental infrastructure markets provides an advantage to specialist investors who understand the intricacies of different policy environments and can underwrite investments in selected sub-segments with full understanding of related risks. Renewable energy, followed by other areas of the environmental infrastructure market, is rapidly becoming better understood, although much complexity—thus, much investment opportunity remains.

Market growth and opportunity is particularly evident in the commercial and industrial (C&I) and similarly sized smaller utility-scale segments of the environmental infrastructure sector. For example, market penetration in the US renewable energy C&I sector, including hydro but excluding biomass projects, is estimated at roughly 2% as of 2014, a very modest level relative to the market opportunity.⁶ Experience has demonstrated that the middle- and lower-



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middle-markets are an attractive place to invest with less competition for assets and more arbitrage opportunities, since large investors typically pass over projects below a certain size or at an earlier stage of development. Debt is usually not available for such projects on a standalone basis but is available at the Holdco level for a cluster of such projects.

Investors are beginning to take notice of opportunities created by these favorable trends. Within many market segments, there are a range of project finance opportunities: some sub-segments that are higher-risk and offer higher returns, and other sub-segments with lower risk and lower returns. As a function of process complexity, time-toconstruct, variability of operating expenses, and performance expectations and guarantees, solar PV is currently the lowest risk renewable energy project, followed by hydro, wind, combined heat and power (CHP), and waste-to-value toward the higher end of the risk spectrum.⁷ One of the most effective risk mitigants is portfolio diversification: an investment strategy that blends projects of varying degrees of risk and target returns in the overall investment portfolio.

Overall, the complexity of environmental infrastructure markets, segments, and sub-segments provides an advantage to the specialist investor who possess deep sector knowledge and experience, who understand the intricacies of different policy, technology and market environments, and who can underwrite investments with consideration of appropriate risks to determine an acceptable risk and target return profile.

Conclusion

The clean economy is here today and in need of increased investment. Traditional energy commodity prices will likely continue to be volatile, in conjunction with strong global demand and growing supply limitations. Such volatility is changing corporate considerations toward increasing adoption of environmental technologies. Sustainability concerns have driven increased investment by a growing group of countries, which has contributed to decreasing component costs of proven technologies and laid the foundation on which environmental businesses of today have grown. Increasingly, talented and experienced leaders and professionals are moving into the environmental opportunities sector. Conditions increasingly favor specialized investors who will add value and use their expertise to spot undercapitalized opportunities, mitigate risk, and navigate the market, which should result in top-tier economic returns.

Environmental markets have developed mainly over the past ten to 15 years, as more private capital has flowed into the resource management sector. These markets feature

strong growth prospects, are in need of substantial businessscaling support and project capital. They are characterized by common or related value drivers and less-correlated risk factors, and exhibit operating characteristics that make investing in them attractive for a middle-market, specialized private investment firm. The complexity of Environmental Business markets and Environmental Infrastructure markets provides an advantage to specialist investors who have deep sector knowledge and experience, who understand the intricacies of different policies, technology and market environments, and who can underwrite investments with consideration of appropriate risks to determine an acceptable risk and target return profile.

Important societal co-benefits help make environmental markets attractive destinations to invest not only for profit but also for significant societal impact—without the need to trade-off on either objective. In most cases, the very factors that create environmental problems, such as inefficient resource use, also create opportunities for extra-normal profits. With the right approach, environmental markets offer investors opportunities to capitalize on resource inefficiency and reap attractive returns.

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Founded in 2009, NewWorld Capital Group is a private investment firm focused on investing in the rapidly growing environmental opportunities sector, principally in the United States and Canada. NewWorld makes growth equity and infrastructure investments in rapidly growing mid-sized companies and operating assets in energy efficiency, clean energy, water reclamation and reuse, waste-to-value, and environmental services. The Firm seeks out for investment companies with proven technologies, the ability to scale, and management teams with whom a productive partnership can be formed. NewWorld was founded by a group of experienced investors and business builders from General Electric. McKinsey & Co., and several private equity firms.



¹ For a discussion of the opportunity to engage in top-tier returns while also creating valuable societal co-benefits in environmental investing, see the essay entitled "Impact Investing: Trading Up, Not Trading Off," in the NewWorld essay series On Matters that Matter, at www.newworldcapital.net.

² For a detailed exposition of these market segments for investment prospects, see the essay entitled "The Rise of Environmental Business Markets," in the NewWorld essay series On Matters that Matter, at www.newworldcapital.net.

³ U.S. Partnership for Renewable Energy Finance, Renewable Energy Finance, Market & Policy Overview, April 2014

⁴ Clean Energy Pipeline transaction data

⁵ In this essay, "utility-scale projects" is a term that refers to projects that have a utility offtaker rather than referring to a specific project size

⁶ U.S. Energy Information Administration; NewWorld analysis

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