



Light Green Advisors

Global Carbon Market Small Caps—Sector Report

Carbon Value

The recent explosive growth in the global carbon/greenhouse gas (GHG)-carbon equivalent market has created unprecedented value for companies involved in businesses ranging from the mitigation of fossil fuel impact to the commercialization of GHG emissions offset credits. Moreover, the regulatory exigencies and market forces that have contributed to global carbon market growth over the past year or two will continue into the years ahead, further enhancing the core value prospects of carbon market businesses.

Carbon market ‘small caps’ (market value under \$1B) have, in particular,

experienced significant value gains and capital infusions. That is, emerging niche firms that provide technology and/or expertise necessary to meet GHG regulatory compliance mandates have been at the forefront of carbon market sector growth.

LGA Analysis

Light Green Advisors (LGA) believes that carbon market ‘small caps’ display unique value characteristics that can be both quantitatively analyzed and constructively modeled. LGA evaluates carbon market ‘small caps’ by modeling ‘value drivers’ that are generally similar to those that affect large energy companies; however,

GHG regulatory currents and ever-present carbon price volatility impose an additional all-important level of complexity on carbon market ‘small cap’ value modeling.

This report explores carbon market ‘small cap’ value modeling given the global regulatory and market factors currently in play. **Part I** evaluates carbon market investment and commodity-pricing trends; **Part II** identifies leading carbon market *small cap* participants; **Part III** advances a set of interconnected drivers that determine carbon market *small cap* value; and **Part IV** examines investor considerations.

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Part I: Carbon Market Trends

Capital Infusion

Although the global carbon/greenhouse gas (GHG)-carbon equivalent market has been in development for more than a decade, the January 2005 entry-into-force of the European Union Emissions Trading System (EU ETS) brought with it the establishment of a critical component necessary for sound carbon market sector analysis: a globally-accepted, exchange-driven price for carbon (denoted in price per ton of carbon dioxide equivalent.) Indeed, the emergence of an EU ETS carbon price has coincided with a dramatic increase in investment in businesses that specialize in all aspects of meeting the GHG emissions reduction challenge. In particular, ‘small cap’ (market value under \$1B) carbon market companies that specialize in one or more GHG emission reduction niche areas have seen strong investor interest.

For example, the value of carbon market ‘small caps’ listed on the London Stock Exchange’s AIM index increased by an estimated \$2B in 2005. In addition, more than a dozen significant initial public offerings (IPO’s) of ‘small cap’ stocks have occurred on global exchanges since early 2005.

Price Volatility

Over the past sixteen months, the principal financial instrument traded on the EU ETS, the European Union Allowance (EUA), has traded at prices ranging from slightly above € 6 per ton to slightly below € 30 per ton, including recent volatility involving a drop in the price of carbon of more than 50% in less than a month. EUA price fluctuation has been, in part, a reflection of shifting expectations regarding the demand for EU ETS-traded instruments by signatories to the Kyoto Protocol. In other words, as expectations regarding the achievement of GHG compliance goals have improved, the price of carbon has dropped, and vice versa.

Other factors, such as energy prices and the pending implementation of additional GHG regulatory regimes, have also influenced the EU ETS price of carbon.

It is likely that the global price of carbon will stabilize as GHG compliance expectations are clarified and additional GHG regulatory regimes come into force. Importantly, carbon-priced instruments traded on nascent and forthcoming GHG regulatory exchanges may not be compatible with those currently traded on the EU ETS, creating exchange-specific prices for carbon. In that respect, the price of carbon may ultimately differ fundamentally from that of traditional energy commodities, such as oil. Under that developing scenario, carbon market businesses could potentially derive added value from their capacities to meet the specific demands created by a range of carbon exchanges.

EU ETS and US REC Market Comparison

While GHG trading exchanges are only now coming into force in the US, regulatory-driven clean energy/clean technology exchanges have existed for years. Among the most vibrant US exchanges are Renewable Energy Credit (REC) trading systems. REC exchanges, from an environmental perspective, increase clean energy/clean technology options for fossil fuel consumers in much the same way the EUA’s do; however, the exchanges on which they are traded do have a number of differences.

The European ETS is part classic ‘cap and trade’ system in that it is based on the allocation of permits to emit (called ‘allowances’) to a defined group of ‘capped’ GHG emitters, and part ‘open’ credit system in that it provides a potentially unlimited number of additional participants the opportunity to sell emission reduction credits to capped entities. In effect, the ‘cap’ aspect increases compliance costs for ‘capped’ entities, and the ‘open’ credit aspect mitigates those costs. Investors, however, face the

risk that inexpensive credits might significantly decrease the value of companies serving the market.

The US REC market, on the other hand, requires public utilities, corporations, and governmental entities to purchase energy sources from certain types of supplies to meet specific compliance requirements. Thus, the market creates monopolistic conditions for certain types of supplies. Investor risks are both oversupply for the market pool and the emergence of new low cost renewable energy supplies.

Because both the EU ETS and US REC markets are driven by a combination of regulatory and market forces, analytical valuation models are critical to identifying and exploiting market developments. For further information on the LGA approach to analyzing both these markets, please contact Christopher Murphy, LGA Managing Director for Public Affairs, at cjmurphy@lightgreen.com.

Part II: Carbon Market Leaders

Sector Segmentation

Carbon market *small caps* can be broadly segmented into two categories: firms that provide clean energy/clean technology; and firms that develop and/or commercialize GHG offset credits. That is, carbon market *small caps* either provide the means for regulated point sources to reduce their carbon emissions, or they in some manner develop the financial instruments that regulated point

sources can acquire to meet mandated emissions reduction requirements.

Traded/Not-Traded

Carbon market *small caps* can also be differentiated between those that are publicly-traded and those that are privately-held. Understanding which publicly-traded carbon market *small caps* have market capitalization genuinely reflective of their business value is essential to sound valuation, as is understanding which privately-held carbon market *small caps* have value that would translate to legitimate

public-offering (IPO) value. Clearly, some publicly-traded carbon market *small caps* have experienced inflated values due to the sustained carbon market capital infusion; and similarly, some privately-held firms have rushed to public-offerings to take advantage of this capital infusion. In order to filter-out the value-distorting effect of the recent wave of investment capital, carbon market *small cap* valuation must be based on an analysis of proven value drivers. That is, valuation must be based on factors that truly drive firm value.

Selected Carbon Market Small Cap Leaders

Company	Business Line(s)	Market Capitalization
AgCert	Agricultural Methane Capture GHG Offset Credit Development	\$300 M (LSE)
Camco International	GHG Offset Credit Development	\$150 M (AIM)
CO2 Credit Capital	GHG Offset Credit Investing/Financing	no public shares
Climate Change Capital	GHG Offset Credit Investing/Financing	no public shares
Climate Exchange	GHG Offset Credit Trading Platform	n/a
Comverge International	Utility Demand-Side Management	no public shares
Econergy International	GHG Offset Credit Investing/Financing	\$100 M (AIM)
EcoSecurities	GHG Offset Credit Origination GHG Offset Credit Investing/Financing	\$500 M (AIM)
Evergreen Solar	Solar Energy Technology	\$550 M (NASDAQ)
Evolution Markets	GHG Offset Credit Broker	no public shares
Det Norske Veritas	GHG Offset Credit Verification	no public shares
Dynamotive	Liquefaction of Agricultural Waste	\$185 M (OTC)
NatSource	GHG Offset Credit Broker	no public shares
Nexterra	Gasification of Wood Waste	no public shares
Renewable Energy Holdings	Renewable Energy Investing/Financing	\$35M (AIM)
Solar Integrated Technologies	Solar Energy Technology	\$10 M (AIM)
Trading Emissions PLC	GHG Offset Credit Origination	\$350 M (AIM)
US Energy Systems	Landfill/Methane Recovery	\$55 M (NASDAQ)

Part III: Carbon Market Value

Worldwide Web

With carbon market *small caps* riding the recent, substantial capital infusion surge, it's easy to lose sight of the critical forces that actually drive the underlying value of carbon sector firms. Those critical forces can be broadly categorized as government action and market pressures; however, the interplay between government action and market pressures has created a series of inter-connected value drivers that synergistically influence the true value of carbon market firms.

Government actions that influence the value of carbon market *small caps* include both expected further GHG regulatory restrictions, most notably in the high-emissions regions

of North America and Europe, and unpredictable EU ETS-nation demand for allowances and offset credits as county-specific compliance requirements come into force. Market pressures, external to carbon market prices themselves, include the prices of fossil fuel and alternative energy supplies. Government actions, of course, also affect both fossil fuel supply and demand, and alternative energy supply and demand. Market pressures, such as those exerted by rising fuel-dependent economies and political events in fossil fuel producing countries, in turn affect government attitudes on alternative energy as well as the political and social currents influencing GHG regulation.

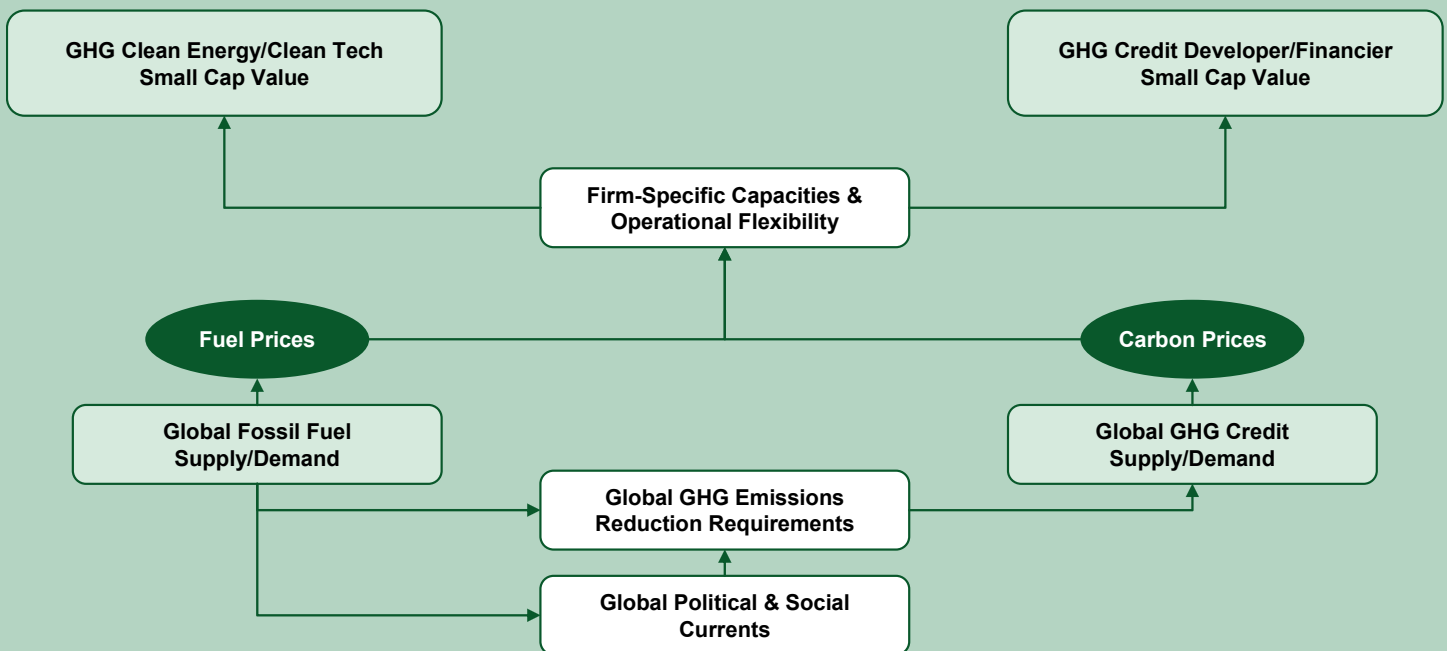
Business Breakdown

Value drivers impact carbon market *small caps* in different ways. Carbon

market clean energy/clean technology *small cap* value, for example, is generally less affected by the price of carbon than the prices of fossil fuel. Carbon market GHG credit developer/financier *small cap* value, on the other hand, is greatly less affected by the prices of fossil fuel than by the price of carbon. The prices of alternative energy supplies, which influence the overall price of fuel, affect carbon market clean energy/clean technology *small cap* value and GHG credit developer/financier value to the same degree, in general, although renewable energy *small cap* value is greatly affected.

Moreover, company-specific capacity to take advantage of developing government actions and shifting market pressures is a significant additional value-driving factor.

GHG Small Caps Value Drivers



Part V: Carbon Market Investing

Quantitative Modeling

The global carbon market is experiencing explosive growth, while—concurrently—greenhouse gas emissions regulatory regimes come into force and carbon prices fluctuate substantially. Realizing positive returns from carbon market investing under current conditions, therefore, requires both an in-depth understanding of the relationship between government action and carbon-priced assets, and strong insight into energy industry and energy sector dynamics. Carbon market *small cap* investing requires a particularly attuned understanding of government and market forces—but offers substantially high return potential over both short- and long-term horizons. Furthermore, the combination of government uncertainty and market volatility strongly suggest that a quantitative

approach to carbon market *small cap* investing is an imperative for success.

For example, quantitative models that successfully predict the market value implications of environmental regulations for large publicly-traded companies (as the Light Green Advisors Eco-Index™ predicts market value impacts by company across all industry sectors, and in terms of intensity by likely regulatory scenario) have characteristics that can be adapted to the likely short- and long-term effects of greenhouse gas regulations on carbon market *small caps*, both according to the timing and the comprehensiveness of particular government actions. In addition, the compounded effects of negative governmental and energy market impacts can be successfully incorporated into a carbon market *small caps* quantitative investment model.

Synergistic Strategy

Various carbon market *small caps* are highly likely to experience significant declines despite the generally positive market indicators outlined in this report (such as strong carbon market investment inflows, increased alternative energy demands, rising fossil fuel prices, and imminent greenhouse gas emissions restrictions) -- and to a limited degree those declines have already begun to materialize. Carbon market *small caps* investment strategies should therefore include both short and long positions, with an emphasis on timing trades to specific event scenarios. Furthermore, an effective strategy should consider the momentum towards consolidation in virtually all carbon market sectors, and the value premiums of attractive consolidation targets. Finally, privately-held carbon market *small caps* should be assumed, and evaluated, to be potential IPO candidates, and potential acquisition targets.

The Light Green Advisors (LGA) Approach to Investing

Investing Discipline

LGA ensures disciplined investing through proven methods:

- » *Compelling Valuation*: Evaluate value in the context of historical/forecasted profit and loss, discounted cash flow, and prevailing cost of capital.
- » *Arbitrage Potential*: Determine if profits from spreads between markets and/or related products exist, including across geographic lines.
- » *Relativity Analysis*: Determine if acquisition target features relative advantages over peers or comparable investments.
- » *Market Analysis*: Determine if specific geographic markets offer distinct advantages because of regulation, market forces or time dynamics.
- » *Product Characteristics*: Determine if relative value of target's products or services are in improving or declining markets and/or submarkets.
- » *Market Characteristics*: Evaluate served market price trends and price opportunities, as well as external market pressures.

Investing Process

LGA implements investment strategies by precise measures:

- » Development of sector economic models
- » Development of public policy scenarios
- » Development of sector pricing forecasts
- » Development of product demand scenarios
- » Identification of specialized impacts on sectors
- » Categorization of companies in sectors
- » Prioritization of company economic characteristics
- » Evaluation of specialized company-specific risks
- » Identification of asset acquisition targets
- » Analyze portfolio dynamics across industry sectors
- » Execution of proprietary trading strategy
- » Monitor portfolio for exogenous catalytic events

About Light Green Advisors

Light Green Advisors (LGA) is a Seattle-based registered investment advisor that manages blue-chip portfolios of selected industry environmental performance leaders, as well as returns-driven investment vehicles designed to arbitrage value aspects of emerging environmental opportunities. LGA employs a proprietary evaluation model that quantifies environmental performance in financial terms, and balances portfolios across industry sectors. LGA has been managing inclusive ‘best-of-class’ portfolios longer than any other North American asset manager, and is one of the few global managers with a positive live ‘alpha’ record. LGA clients include governments, corporations, non-profit institutions, endowments, foundations, and high net-worth individuals.

Environmental Investing

Environmentally Responsible Investing (ERI) is often considered a subset of Socially Responsible Investing (SRI)—perhaps because traditional SRI exclusionary or negative-screen approaches are widely used by ERI asset managers. ERI actually offers much more. Light Green Advisors (LGA)’s ‘best-of-class’ approach, for example, provides a returns-driven philosophy based on detailed environmental analysis. That is, there is a quantifiable relationship between superior environmental performance and positive financial performance that exists across virtually all industry sectors, which suggests that ERI models can be genuinely returns-driven. LGA has proven this to be true. And like SRI, environmentally responsible investing can also be used to assert deeply held values.

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