



**The Meaning of Copenhagen:
Liquidity Horizons and Physical vs. Synthetic Environmental Value**

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The recent climate summit in Copenhagen was both disappointing and encouraging for the prospects of environmental investing. The lack of a binding global agreement to replace the Kyoto Protocol has thrown the existing international carbon markets into disarray. Political commitments to address climate change appear increasingly heterogeneous and timetables for their implementation remain uncertain. At the same time, the diplomatic magnitude of the event, and symbolic agreement for the first time by all the major emitters to reduce emissions with the long-term goal of avoiding a 2°C increase in global temperatures, should lend confidence that the political focus on the environment will only strengthen. More tangibly, the summit did lead to firm commitments by Western nations of \$100 billion per year in climate-related financing to the developing world, the bulk of which is expected to flow through carbon markets and the private sector.

From an investment perspective, the outcome of Copenhagen reinforces the general conclusion that there is a clear, strong macro trend towards environmental and clean energy investments, but that we can expect a continued period of near-term uncertainty in the exact nature and value of corresponding investment strategies. How then should investors best allocate to the long-term trend and manage the short-term noise and uncertainty?

Naturally, liquidity constraints will provide the dominant guidance. The environment itself is the ultimate illiquid asset (we have only one, after all), and returns from environmental investments can only be expected to materialize over longer timeframes. The absence of a coordinated global climate agreement has pushed out the horizon for large, liquid carbon markets beyond the existing EU Emissions Trading Scheme, which runs through 2020. Patience is required from capital providers seeking exposure to this and other dislocations in the energy and environmental orders while slow moving negotiations and legislative processes grind towards consensus on specific policy mechanisms. Long-term capital is best-placed to manage these constraints and generate risk-adjusted returns from environmental investment strategies.

Beyond liquidity issues, understanding the top-line attributes of target assets is critically important. Environmental investments ultimately derive their returns from revenue streams and cash flows based on underlying projects, products, and infrastructure, or derivatives thereof. *Physical revenue streams* come from sources such as efficiencies and the sale of power, fuels, and environmentally friendly products, all of which have large natural markets. *Synthetic revenue*

streams, on the other hand, are derived from the monetization of intangible environmental benefits and externalities within a policy framework. Examples of such synthetic revenue streams include carbon credits, renewable energy certificates, tax credits, as well as payments for so-called "ecosystem services."

Physical revenue streams generally have a sound basis and will continue as the baseline source of returns for this sector. The meaning of Copenhagen is that synthetic revenue streams will continue to grow in importance for environmental assets and investment strategies, differentially boosting returns to this sector and increasing its attractiveness versus alternative allocations. However, the short-term policy fragmentation increases the uncertainty around both the value of synthetic revenue streams as well as which specific investment activities will be eligible or "credited" for their environmental benefits.

Synthetic environmental assets that must be monetized in an uncertain policy context face the risk that the scope of the underlying asset, project, or investment will not qualify according to the regulatory requirements, and thus be deemed ineligible for crediting—even if a genuine environmental benefit is being created. The origins of this "monetization risk" stem from the fact that the monetization process is at best an incomplete way to capture and value intangible environmental benefits, as it must take place within an uncertain and imperfectly defined legal, regulatory, and market framework.

Qualitatively, the collective strength of various emission reduction targets at the national and state level will be a rough proxy for the value of unhedged synthetic revenue streams (equivalent to market price risk), while the likelihood of credit eligibility will determine the monetization risk. If this likelihood of ineligibility is high, markets will continue to value environmental benefits at or near zero and negative-return investment scenarios are the likely result. The figure below illustrates this risk/return profile and possible total-loss-of-capital scenario from investment strategies focused purely on synthetic revenue streams (here, a buy-and-hold strategy for carbon credits in advance of future cap-and-trade legislation in the US).

Probability Credits Eligible for Cap-and-Trade in 2015

	100%	75%	50%	25%	0%
\$5	0%	-6%	-13%	-24%	-100%
\$10	15%	8%	0%	-13%	-100%
\$15	25%	18%	8%	-6%	-100%
\$20	32%	25%	15%	0%	-100%
\$25	38%	30%	20%	5%	-100%
\$30	43%	35%	25%	8%	-100%
\$35	48%	39%	28%	12%	-100%
\$40	52%	43%	32%	15%	-100%
\$45	55%	47%	35%	18%	-100%
\$50	58%	50%	38%	20%	-100%

Representative returns from a long-only investment strategy focused purely on synthetic instruments (here carbon credits valued at \$5/ton in 2010) over a five-year holding period, at various future market prices and probabilities that the instruments will be eligible for monetization (i.e., monetization risk, here the likelihood that specific carbon credits will be grandfathered into a US cap-and-trade system in 2015).

Source: Climate Wedge Ltd

In the short term, environmental and low-carbon investment strategies focused on physical revenues will continue to prosper: efficiency measures, renewable infrastructure build out, as well as clean energy sources that are nearing cost competitiveness with fossil energy. The bond-like nature of these investments also will be suitable for leveraged strategies and traditional fixed income-focused investors (so long as technology risks have been baked out of the system).

Synthetic revenue streams, on the other hand, face a period of continued uncertainty, until there is resolution in the policy disorder, either by a future international climate agreement or more loosely coordinated regional regulations. The zero-value/negative-return profile eliminates synthetic revenue streams as a stand-alone opportunity for all but the most risk-tolerant investors, such as those accustomed to investing in venture capital, mining stocks, or option-like strategies.

The policy fragmentation resulting from Copenhagen does provide some measure of diversification of monetization risk for investors open to global asset allocations. But in general, investors should focus on strategies that develop renewable or environmental assets, which will generate both physical and synthetic revenue streams, as opposed to simply trading synthetic credits. In this case, the environmental attributes become an equity kicker to otherwise modest, but steady physical returns.

In a world of generally increased uncertainty, the overall trend of increased value from environmental strategies provides investors with room for optimism in the decade ahead. Those investors with a long time horizon and a keen eye for value from both physical and synthetic

revenue streams will be well-placed to manage the near-term uncertainty and take advantage of opportunities resulting from the global transition to a low-carbon economy.

Biography

Alex Rau is a founding partner of Climate Wedge Ltd, an independent firm providing carbon finance and emissions trading related advisory and asset management services, and pursuing principal investments and project development in the carbon markets. Alex has nearly a decade of experience in carbon finance, emissions trading, and environmental commodities. He was previously part of the Climate Change Services team in PricewaterhouseCoopers's Energy Corporate Finance practice in London, developing and structuring portfolios of carbon assets during the early stages of the Clean Development Mechanism market as well as designing Kyoto response strategies for multinational corporations. Alex has worked with numerous clients such as Cheyne Capital, McKinsey & Company, Rio Tinto, News Corporation, Electricite de France, the California Public Employees Retirement System (CalPERS), and CSIRO on carbon-related issues. He also coauthored the original version of the Voluntary Carbon Standard, the most widely accepted trading standard for non-Kyoto carbon assets, and has published in journals ranging from *Science* to the *Harvard Business Review*. Alex has a Ph.D. in physics from Oxford University, a B.A. from Cornell University, and is a CFA charterholder.