

When Green Meets Gold:

A Call for Integral Wealth Ethics in the Climate and Energy Dialogue

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We're here again. Economic uncertainty, energy volatility, environmental stresses, and a latter-day epiphany that "*something must be done*". While the actors have new faces and the urgency has a new fervor, something gnaws at our consciousness – haven't we been here before? Why didn't solutions emerge last time? Who is to blame for getting us into this mess?

First, some facts. Since the 1970s, over 30,000 patents have been issued around the world for innovations and inventions in non-fossil fuel alternative energy technologies including solar photovoltaic, biomass, wind, tidal, geothermal, hydrogen, fuel cells, to name a few. Major research institutions and corporations – including energy giants like ExxonMobil, BP, Royal Dutch Shell, ConocoPhillips, ChevronTexaco, Total Elf Fina – have seen massive investments made in alternative energy, large proprietary estates amassed, only to have them slip anonymously into abandonment or expiration having never fulfilled their commercial or social intent. The public utility infrastructure and delivery giants, too, have made considerable investments and, like the energy companies, have seen these slip into oblivion. Ironically, at precisely the moment when the world is reawakening to its "inconvenient truth" that something must be done to break our Promethian imperative to burn fossils, Europe, the U.S., China, and Japan face a perplexing dilemma. In short, the very future that we seek has been protected, abandoned, or expired – patents now expired and in the public domain – leaving commercial interests and public policy makers in a puzzling state. And no one is sure why adoption of promising technologies didn't happen the last several times we were in energy shock. However, this time it's different in one important way – namely, with the collapse of the financial markets, insurance and institutional investment in particular – the real systemic obstacle can be identified and engaged.

There are those who argue that the impulse for major corporations to patent and then fail to manifest alternative energy technologies was a way to reinforce entrenched incumbency. By patenting and thereby precluding others from market entry, the incumbency could preserve its position. While there appears to be some evidence of this activity in the historical record, a more conspicuous and endemic challenge has been overlooked by even the most avid advocates for change. And, sadly, if overlooked, it will entrap us once again.

Energy capture and distribution rides on one of the least understood but most ubiquitous financial infrastructures of the modern age – sovereign, municipal, and corporate bonds. A form of debt – highly sought after due to perceptions of stability – bonds are the financial instruments that underpin the energy infrastructure. From drilling, pumping, transporting and refining of fossil fuels, to power capture, to grid distribution, each step of the current fossil fuel system is financed using the long-maturity debt instruments. Offering yields ranging on average between 5-7% with maturities ranging from 10-40 years, these investments not only support the energy industry but are inextricable components to the global financial system itself. Financial institutions (primarily insurance companies and pension funds) reported total assets of over \$30 trillion in 2005¹. When one considers the

¹ Bank for International Settlements (2007). CGFS Paper No. 27. Institutional investors, global savings and asset allocation.

dependency of insurance and pension funds on long-term bonds, the perpetuation imperative is overwhelming with 47% and 25% of total assets in bonds, respectively. In other words, each individual with a life-insurance policy or a pension account is significantly invested in municipal and corporate bonds. Investors in mutual funds also carry significant exposure to these instruments. To ensure long term investment returns, we all have “safely” invested in the very financial vehicle which stands in the way of alternative energy impulses.

A bond achieves its value through several mechanisms. First, the issuer is usually a well established entity with a known financial record of recurring revenue in the form of taxes, utility fees or other stable revenue. Second, insurance companies, seeking to generate risk-acceptable premium income often provide insurance to further support the stability of promised yields. And, finally, due to their desirability, a secondary market exists to trade bonds which provides a liquidity option that can be useful in asset allocation balancing. However, these fundamental principles also have an insidious effect on limiting society’s adaptation – particularly in cases where such adaptation calls for rapid assimilation of alternative technologies.

Let’s explore our Green meets Gold paradox. In our current paradigm, energy sources have a cost for extraction (wells, mines and pumps), transportation (pipelines, ships, and transportation) and refining (ports, refineries). These costs are amortized over an average of 30 years and, as such, need to generate consistent investment returns in the form of predictable operating revenue for the same period. Our power generation facilities are financed through bonds which, like the commodities that they burn, have amortized investment lives ranging from 20 to 40 years. And then the distribution grid – that tangled web of inputs and distributed outputs – are similarly financed. In less than a decade, ThomsonReuters reports that in many regions, municipal borrowing for infrastructure projects has more than doubled from 2000 to 2008² meaning that the inventory of these long-term performance investments has skyrocketed. This multi-trillion dollar global financial industry, through inexpensive debt, has become a global fixture that actually precludes rapid-scale obsolescence or replacement.

For the sake of argument, let us consider that BP or Royal Dutch Shell wished to phase out of fossil fuels and promote green alternatives. Traditional discussions have taken a snap-shot calculation which simplifies into the following caloric dogma: it costs \$ x to deliver y kW or calorie. When fuel costs exceed a certain threshold, then alternatives “make sense”. However, absent from this simplistic calculus is the recognition that not only does the alternative have to compete on the instant production to usable kilowatt and calorie paradigm but it must also bear the burden of the full maturity annuity value of the remaining life of the bond that financed the utilization chain. And not just one element of the system. Simply replacing an extraction/refining piece does nothing to accommodate the power plant or grid bonds. Reducing the grid dependence does nothing to accommodate the extraction, refining, or power plant bonds. By failing to include the return-on-investment variables in the alternative energy conversation, simplistic intuitions of the self-evident social logic fail to expose the public to the real social cost of transformation. As a result, even considered approaches to alternative energy all too often fall into the trap of having to assume the distribution grid (or any other one of the value chain components) as a constant – not because it’s efficient (for, in point of fact, it’s highly inefficient) – but if you put power harnessing in a distributed environment, the municipal annuity would prematurely collapse taking with it the public investment and, more directly, the pensions of the very humans who seek to promote alternatives. Put another way, if one seeks to advocate for energy transformation, it can only happen in the context of a societal acceptance of a redefinition of wealth.

² Nanette Byrnes. “Municipal Bonds Freeze Up. Interest payments soar for cities and counties, some of which loaded up on complex derivative deals similar to the ones that swamped many banks.” *BusinessWeek* writer October 2008.

With bond markets representing close to the equivalent of 70% of the GDP of Europe and 60% of the US GDP and with over 30% of global institutional investment and pension value invested in these long-maturity instruments, it is reasonable to expect that the cost of Green will be an intermediate realignment of wealth expectations. In short, the inertia of the established financial model has been sufficient to overwhelm even the best alternative intentions of the world's largest corporations among whom are counted all the major oil and natural gas companies.

And, when we move to Green, we'll have some additional structured finance challenges. When we reduce our requirement for massive infrastructure to capture, transform and distribute power (thus eliminating the long-term bond investment engine), we will need to stimulate massive, distributed manufacturing capacity to provide energy alternatives to smaller nodes of consumption. On its face, this is a wonderful prospect – thousands of small and medium sized enterprises creating solar, wind, hydro, geothermal, bio-organic, and fuel cell power plants. Further, given the wholesale expiration of platform patents on all of these technologies (which peaked between 2002 – 2007), there will be few, if any, legitimate and enforceable proprietary blockades for inter-regional or international manufacturing and distribution of the same. However, the private equity engine that has been relied on for the past 30 years to stimulate small business in many parts of the world will need to reduce its return on investment expectations to be more aligned with bond yields as the giant, proprietary exit through acquisition or IPO will be unlikely. So, when Green meets Gold, we need to engage in a conversation that:

- Invites incumbent power suppliers to place their abandoned and expired patents and R&D into an open source trust for explicit public use;
- Invites investors to consider transitional models where sunseting maturity on unfulfilled bond yields can be converted into Green Alternative Credits;
- Invites municipalities to provide yield redemption offsets for enterprises who become producers of alternative energy solutions where their revenue can be guaranteed to form the basis for a new, more ethical form of fixed income investment.

The good news is that, with the current financial system perturbations, we are not just invited to change – we face an imperative to transform. In 2009, with Solvency II – the EU's insurance equivalent to the BIS Basel II initiative – a certain perturbation will reform the insurance industry and, as a result, considerably and negatively impact the desirability of municipal and corporate bonds. With municipal defaults already peppering the financial news and with the insolvency of reserve accounts in the insurance market requiring Central Bank intervention, we have the unique opportunity – one that did not exist in this scale during past energy shocks – to replace the defaulting bonds with a more conscious and adaptive finance model. The very pillars that have supported this incumbent financial model are no longer able to provide the investor confidence that they once inspired and the viral effect of this erosion will have permanent effects³. We have a chance to make a meaningful difference by integrating the global energy innovation trust comprised of expired and abandoned patents into a new, more ethical capital structure that welcomes transformation through obsolescence, discovery, and true wealth distribution.

³ **Moody's downgrades FGIC's rating to B1; outlook is negative.** New York, June 20, 2008 -- Moody's Investors Service has downgraded to B1, from Baa3, the insurance financial strength (IFS) ratings of the main operating subsidiaries of FGIC Corporation, including Financial Guaranty Insurance Company and FGIC UK Limited (collectively "FGIC"). In the same rating action, Moody's has also downgraded the senior debt ratings of the holding company, FGIC Corporation to Caa2 from B3 and the contingent capital securities ratings of Grand Central Capital Trusts I-IV to B3 from B2. Today's rating action concludes a review for possible downgrade that was initiated on March 31, 2008, and reflects the company's severely impaired financial flexibility and the company's proximity to minimum regulatory capital requirements relative to our estimations of expected case losses. The rating action also considers the likelihood that FGIC's previously announced restructuring plan will ultimately result in the company retaining the higher-risk portion of the insured portfolio without the premiums associated with its lower-risk business. The outlook for the rating is negative.