

When Nature Gets Valued

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“In the land of the blind, the one-eyed investor is king”

The Sustainability Age is Coming

An unprecedented level of concrete action is now underway to link global economic activity and the value of critical services provided by ecosystems. CEO's take note: that means no more free ride on nature's dime. It also means a looming opportunity in financial services.

For the past few thousand years – with the exception of land and mineral rights – we haven't had the mindset to place a dollar value on earth's ecological resources. As a result, the real competitive cost of those resources has not factored into business decision-making. Businesses have come to rely on a lot of 'free' goods and services: whether it is the right to release carbon dioxide into the atmosphere, the unimpeded opportunity to harvest forest on private land, or the ability to use and divert water from watersheds for agricultural or industrial use. Until now, tangible value has been placed on many things humans enjoy – but not on the life support systems that underpin their existence.

Those days are over. In the next five years, we'll see broad-based recognition that these goods and services are not free. We'll see the emergence of new industry standards with well-developed markets and metrics to measure, price, trade, and hedge (or offset) the sustainability of individual company activities across entire value chains. As ecosystem services become more measurable and transparent, we'll be on a new playing field for how companies compete and how they get evaluated.

This has already begun - and the stakes are large. One estimate of the price these free goods and services would command in a competitive global market ranges between \$16-54 trillion¹. In comparison, U.S. GDP for 2009 was \$14.3 trillion, and the total value of liabilities for non-financial businesses in the U.S. was about \$19 trillion². Today, with these costs either largely unaccounted for or misallocated, there are distorted price signals in national and global markets for products, services, and capital. The implication: investment dollars may be flowing to companies and places that simply will not have the payoffs anticipated under current accounting. As the cost of ecosystem services are properly allocated to their users – which is happening quickly - there will be significant implications in terms of risk, as well as new sources of competitive advantage for nations, regions, and businesses.

We have already seen the growth in the early carbon markets. But, as more free services are identified and priced, the work of structuring corporate balance sheets and income statements to manage these costs, and the growth of trading markets for allocating and moving risk will become a huge part of financial services.

The work to identify the major indexes for these markets is already underway. Multi-stakeholder efforts comprised of leading industry players, drawing on the best available science, are already working to develop metrics to assess the extent to which business activities restore, deplete, or have a neutral impact on the natural systems that underlie human wellbeing. These collaborative, pre-competitive

efforts will soon create unprecedented transparency across entire value chains.

Take the food industry, for example, which is particularly exposed to water issues and water scarcity since roughly 70% of the planet's annual fresh water consumption goes to agriculture. Today, one of the largest food companies in the world – which claims water conservation as its 'top environmental priority' – quietly acknowledges that it only looks at water use in its own production process and that comprises only 1% of its total water use throughout its supply chain. The other 99% is unaccounted for. Within a few years, widely accepted measures of sustainability will create visibility and accountability throughout supply chains, not just inside the four walls of a company's own operations. With global heavy weights like Hewlett Packard, Walmart, Cargill, BASF, and Procter & Gamble already beginning to create sustainability standards with industry partners, NGO's, and leading scientists – with a clear intention to use those standards to influence their business decisions – it's safe to assume the world is about to change. Standard measures for assessing the sustainability of products and companies will fundamentally change how companies pick the suppliers they do business with. It also means that before long, consumers won't have to choose between a product that's either affordable, or one that's designed for sustainability.

And those may not be the most profound implications. Establishing a quantified link, based on standard measures, that begins with the value of ecosystem services and flows all the way to an evaluation of a company's products or services will also re-shape the way investors and the financial world make decisions. Traditional methods of determining how economic value gets created or destroyed will soon look like narrowly scoped assessments of incomplete accounting and economic factors. This will be replaced by insights gleaned from a wide spectrum of intelligent data that takes into account the enormous value of environmental goods and services that have remained external to market systems. Again, how much value are we talking about? Most of the roughly \$33 trillion of average annual value provided by ecosystems to humans is currently not recognized by market systems. That's close to half the planet's total GDP. As this connection becomes more widely understood, we will begin to see a transition from the Information Age to the Sustainability Age.

Opportunity Knocks for Financial Institutions

This impending shift creates very significant risks for some businesses and game-changing opportunities for others. In particular, there is a tremendous opportunity now for a few financial services giants that figure this out: if costs for ecosystem services become systematically and credibly standardized by data that cascades throughout value chains – going from supplier to consumer - this will create new rules and new needs for understanding and measuring business value. It will also define a new set of baskets or commodities used to hedge, trade, and manage the costs and risks of these services.

This is new market formation at its best: Asymmetric information in a huge, inefficient global market of mispriced resources and capital with advantage likely going to first movers with the best information, insights, and leadership. In other words, a window has opened for one or more global financial institutions to shape and develop the data and information engine that sets the new rules for investors in the sustainability age. Here's how to get started:

Understand the pools of data that are emerging and how the forces underway and the players driving this transition will transform the financial world (overtaking the current, relatively crude Environment, Social, and Government (ESG) analytics, SRI funds and sustainability indices which rely primarily on non-standardized metrics using self-reported company data that just looks ‘inside the four walls’ of the company),

Start aggregating the right data and integrating the multitude of existing standards to begin shaping new insights, tools, and benchmarks for measuring business value in a world of radical transparency,

Develop first-mover strategies for proactively addressing risks and seizing opportunities (e.g., refining risk metrics and investment criteria). Three possible strategies depicting what this might look like are outlined in the last section of this paper.

New information and insight is understandable, but why is leadership so important? Because the looming reality is a radical departure from the paradigm we’re currently operating with.

Here is what we mean.

Valuing Ecosystem Services? (A.K.A. a good idea with a lousy name)

Economic progress over the past several centuries has been attributed to many sources: advances in science and technology, stable political conditions, human ingenuity, capital and market formation, and so on. Land, labor, and capital were held as the three classical economic inputs. Among these, there were even times and places when land was free – entire states were homesteaded, with the first to arrive staking claim to property rights. But nowhere does this exist today: land, labor and capital find their prices in a competitive market.

Historically, most ‘free’ services implicit in the use of the environment have been left out of economic thinking. Yet, humans have relied entirely on services provided by the earth’s natural capital. Ecosystems have operated behind the scenes to sustainably provide the conditions within which life, including human life, can thrive on earth. They include services that:

- Regulate and detoxify the chemical composition of the earth’s atmosphere (e.g., CO₂ / O₂ balance)
- Regulate global temperature and precipitation
- Provide, purify, store and regulate flows of fresh water
- Provide food sources such as fish and game
- Provide lumber and other renewable raw materials
- Create pharmaceuticals and biochemicals
- Pollinate crops, disperse seeds, and ensure pest and disease control
- Provide energy (hydropower, biomass fuels)
- Enable cultural, intellectual, spiritual, and recreational experiences

Historically, it's not surprising that ecosystem services were considered free and external to market systems. There was no reason to internalize the costs of these services because their supply appeared infinite – and there was no way to value ecosystem services because the importance, complexity and interrelationships of natural systems were barely understood. In fact, the unintended environmental consequences of global growth were hard to imagine, if not unthinkable.

Today, the full costs associated with our economic progress are beginning to become apparent. Over the past 50 years, humans have had a larger impact on the earth's ecosystems than in any comparable period of time in human history – largely to meet rapidly growing demands for food, fresh water, timber, fiber, and fuel. And, in a relatively short period of time, externalizing the value that ecosystem services provide has caused a measurable detriment to human life support systems. From 2001 to 2005 the UN Millennium Ecosystem Assessment (MA) conducted a landmark study to assess the consequences of ecosystem changes and their relationship to human wellbeing. The MA involved more than 1,360 scientists and experts worldwide and created a shared view of the largest body of social and natural scientists ever assembled to assess knowledge in this area. In sum, this is what they concluded:

“The bottom line of the MA findings is that human actions are depleting Earth's natural capital, putting such strain on the environment that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted. . .The degradation of ecosystem services could grow significantly worse during the first half of this century.”

(For more, see summary of MA Findings below.)

- UN MILLENNIUM ECOSYSTEM ASSESSMENT, 2005

Why Now?

There is indisputable evidence that human activity that compromises earth's life support systems will soon be priced or regulated. Expected global GDP growth, combined with forecasted population of 9.6 billion by 2050 accelerates the current trajectory of ecosystem decline. It's hard to find a peer-reviewed scientist or credible authority that disputes this looming reality, and only political foot-dragging stands in the way of the inevitable. The reality – scientific and political – is inescapable: this will inevitably increase legislative and regulatory pressures to assign value to air, water, energy, and waste while driving efforts to increase corporate accountability and price these services by charging their users. Putting a market price on carbon is just the beginning.

Political and regulatory pressures are not the only forces at work to bring about more accurate alignment of costs for use of natural resources and other currently mis-priced or free ecosystem services. Several industry-leading initiatives are underway to aggregate scientific data and create industry standards for measuring sustainability. This requires sifting through the best research and integrating the alphabet soup of existing global sustainability metrics (e.g., RSB, OIA, CDP, GRI, ISO, RTFO, ISCC, GBEP, UL, and so on). It won't be long before those standards influence real business decisions. Ultimately these efforts have their sights on establishing consumer-facing scorecards or indexes. One of the more influential forces at work is The Sustainability Consortium (TSC). The TSC includes

retail and manufacturing giants that are focused on defining standards for measuring the social and environmental impacts of products across their value chains. Disney, Best Buy, Safeway and other leading retailers have already joined the group first funded by Walmart but now including a collection of world-class universities and 40+ companies. Retailers, CPG companies, agricultural companies, waste companies, packaging companies, chemical companies, governmental entities, academics, and restaurant chains are represented in the TSC. They're preparing for a time when consumers value the environmental and social impacts of products more than they do today (i.e., when the Millennials get purchasing power). But, even in the short term, their efforts will impact business-to-business decision-making and will fundamentally affect what products appear on shelves – well before a consumer can make a Sustainability Index driven purchasing decision based on the ecosystem impacts of a product. And this is just one of several initiatives that signal the coming transformation in global supply chains: a similar effort to establish global sustainability standards for business was recently announced by UL Environment, a business unit of Underwriters Laboratories, the 115 year-old standards and certification organization. And it won't stop there. Mainly because the CEO's behind these efforts are not involved for altruistic reasons.

These business leaders are starting to see opportunities to innovate and shape the future – before it gets imposed on them. Many are convinced that sustainability efforts spark product, process, and business model innovation. They see sustainability efforts creating new sources of competitiveness and serving as powerful catalysts for engaging employees. They talk about creating a 'race to the top' where companies innovate across their supply chains to create high quality products while reducing or eliminating environmental and social consequences. In addition to the forces underway outside the financial world, there is also growing investor pressure around social and environmental performance. CalPERS, the nation's largest public pension fund with over \$212 billion in market assets, is one of many major investors to call for greater transparency and increased attention to corporate social responsibility and sustainability.

So, why now? Because the walls are closing in on the old paradigm.

Three Possible Winning Strategies

In combination, these forces create an immediate opportunity for a leader in the banking, finance, or investment world. By harnessing the same research and metrics that manufacturers, retailers, and industry groups are now using to create standards across industry sectors, some financial institution will focus its quantitative, research, and technology capabilities to aggregate the most reliable information available to get a whole new view of companies against the backdrop of the emerging sustainable, global economy. This information will enable them to better understand and act on newly forming markets and price signals -- better price signals not just for carbon emissions, but also for other ecosystem charges or credits that will affect both income statements (e.g., raw materials) and balance sheets (e.g., deferred liabilities or contingencies for environmental costs). It won't be long before these factors become an important part of corporate finance and general management decision-making.

A first mover could truly be the ‘one eyed man in the land of the blind’, benefiting from brand and reputational benefits that come from industry leadership, while shaping new standards for how company value and risk are priced, managed, and traded. At least three specific first-mover strategies appear feasible:

- 1) Aggregate and leverage emerging standards to develop a new S&P 500 or Dow 30 that becomes the 21st century benchmark for evaluating company performance and benefit from the licensing and trading flow that occurs around the index or basket.
- 2) Prepare to seize opportunities from customer financial advisory services, risk and cost distribution, and proprietary trading to hedge, transfer, or trade the costs and risks in the market as a business line in its own right (carbon trading is an early example).
- 3) Become the authoritative information and pricing hub, effectively the Bloomberg of the sustainability age – owning and distributing the most reliable information platform used across the financial world to evaluate sustainability risks and opportunities.

There are already several early-stage, often ideologically based SRI funds and CSR/Sustainability Indices that track companies using mostly self-reported data from companies’ sustainability reports and scorecards. Today, none of them take into account the data emerging from the unprecedented levels of collaboration now underway to compile research and set standards for evaluating environmental and social impacts of businesses and their supply chains. Case in point: the giant food company mentioned above (which declared water conservation its top environmental priority and has visibility into only 1% of its water use) has been receiving top ratings on managing its water risks by the leading research, analysis and rating organization that screens sustainability risks for investors. Clearly well intended – but not quite ready for the world of radical, end-to-end value chain transparency and accountability.

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It now appears inevitable that environmental externalities - the negative consequences of doing business - will be internalized. Stock prices will reflect a company’s reliance, or unintended impacts, on ecosystem services. The change that will make this possible – the emergence of sufficiently reliable measurement methods to drive credible valuation – is already underway. The creation of generally accepted accounting principles for these former externalities will formally usher in the sustainability age that has been taking shape now for several decades.

Once mispriced ecosystem products and services are measurable and identifiable, they can and will be traded. Initially the coming transformation will result in relatively inefficient markets with asymmetric information advantages going to the first mover. As industry standards take shape, this information will get translated into price and valuation mechanisms, and subsequently financial products that allow the hedging or transferring of risks and costs in a fluid way that realistically reflects a new way of doing business in the global environment. These price mechanisms will eventually be consumer facing and will accelerate the trend toward radical transparency (already understood as the emerging norm for the Millennial generation and among leading manufacturers and retailers), closing the accounting and infor-

mation gap between what's good for business and what's good for the planet.

As in previous transitions from one era to the next, a small number of prescient business leaders will have disproportionate influence in shaping the future as it unfolds. As modern economies formed, most of earth's life support systems were thought to be limitless and their costs valued at zero, but in reality they do have their limits. Now that these limits are being stretched, this cost misallocation is being regulated, legislated, and several notable industry leaders are already out in front preparing to compete under new rules. These leaders also understand that there is no place to hide. Air pollution created in Beijing shows up in San Francisco and deforestation in the Amazon affects rainfall and crop yields in the Midwest. A number of business leaders who 'get it' want to do the right thing, but make no mistake: they also see this new, transparent playing field threatening existing business models – or opening up tremendous business opportunities.

¹ Source: The Value of the World's Ecosystem Services and Natural Capital, Nature, May 1997

² Source: U.S. Federal Reserve Flow of Funds, Q4 2009

Key Findings

2001 - 2005 UN MILLENNIUM ECOSYSTEM ASSESSMENT

60% of (15 out of 24) ecosystem services have been degraded or are being used unsustainably. Ecosystem changes are nonlinear and therefore include accelerating, abrupt, and potentially irreversible changes that have important consequences for human wellbeing. Examples of such changes include disease emergence, abrupt alterations in water quality, the creation of ‘dead zones’ in coastal waters, the collapse of fisheries, and shifts in regional climate.

Major problems exist with tropical forests and coral reefs but from the standpoint of linkages between ecosystems and people, the most significant challenges involve dry land ecosystems – which are particularly fragile and where human population is growing most rapidly, biological productivity is least, and poverty is highest.

Excessive nutrient loading (the input of fertilizing chemicals into rivers, lakes, and other marine environments) is a major driver of ecosystem degradation today and will grow significantly worse in the coming decades unless action is taken.

The consumption of ecosystem services, which is unsustainable in many cases, will continue to grow as a consequence of a likely three- to six fold increase in global GDP by 2050 even while global population growth is expected to slow and level off in mid-century. Most of the important direct drivers of ecosystem change are unlikely to diminish in the first half of the century and two drivers—climate change and excessive nutrient loading—will become more severe.

An effective set of responses to ensure the sustainable management of ecosystems requires substantial changes in institutions and governance, economic policies and incentives, social and behavior factors, technology, and knowledge. Actions such as the integration of ecosystem management goals in various sectors (such as agriculture, forestry, finance, trade, and health), increased transparency and accountability of government and private-sector performance in ecosystem management, elimination of perverse subsidies, greater use of economic instruments and market-based approaches, empowerment of groups dependent on ecosystem services or affected by their degradation, promotion of technologies enabling increased crop yields without harmful environmental impacts, ecosystem restoration, and the incorporation of nonmarket values of ecosystems and their services in management decisions all could substantially lessen the severity of these problems in the next several decades.