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Article

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Risk: Seeing around the corners

By Eric Lamarre and Martin Pergler

Risk-assessment processes typically expose only the most direct threats facing a company and neglect indirect ones that can have an equal or greater impact.

The financial crisis has reminded us of the valuable lesson that risks gone bad in one part of the economy can set off chain reactions in areas that may seem completely unrelated. In fact, risk managers and other executives fail to anticipate the effects, both negative and positive, of events that occur routinely throughout the business cycle. Their impact can be substantial—often, much more substantial than it seems initially.

At first glance, for instance, a thunderstorm in a distant place wouldn't seem like cause for alarm. Yet in 2000, when a lightning strike from such a storm set off a fire at a microchip plant in New Mexico, it damaged millions of chips slated for use in mobile phones from a number of manufacturers. Some of them quickly shifted their sourcing to different US and Japanese suppliers, but others couldn't and lost hundreds of millions of dollars in sales. More recently, though few companies felt threatened by severe acute respiratory syndrome (SARS), its combined effects are reported to have decreased the GDPs of East Asian nations by 2 percent in the second quarter of 2003. And in early 2009, the expansion of a European public-transport system temporarily ground to a halt when crucial component providers faced unexpected difficulties as a result of credit exposure to ailing North American automotive OEMs.

What can companies do to prepare themselves? True, there's no easy formula for

anticipating the way risk cascades through a company or an economy. But we've found that executives who systematically examine the way risks propagate across the whole value chain—including competitors, suppliers, distribution channels, and customers—can foresee and prepare for second-order effects more successfully.

Risk along the value chain

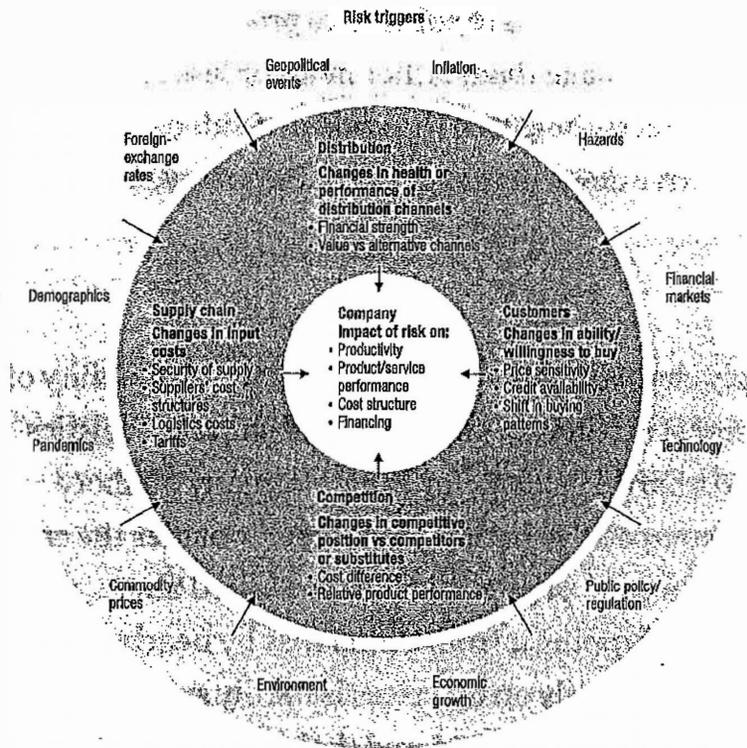
Most companies have some sort of process to identify and rank risks, often as part of an enterprise risk-management program. While such processes can be helpful, our experience suggests that they often examine only the most direct risks facing a company and typically neglect indirect ones that can have an equal or even greater impact.

Consider, for example, the effect on manufacturers in Canada of a 30 percent appreciation in the value of that country's dollar versus the US dollar in 2007–08. These companies did understand the impact of the currency change on their products' cost competitiveness in the US market. Yet few if any had thought through how it would influence the buying behavior of Canadians, 75 percent of whom live within 100 miles of the US border. As they started purchasing big-ticket items (such as cars, motorcycles, and snowmobiles) in the United States, Canadian OEMs had to lower prices in the domestic market. The combined effect of the profit compression in both the United States and Canada did much greater damage to these manufacturers than they had initially anticipated. Hedging programs designed to cover their exposure to the loss of cost competitiveness in the United States utterly failed to protect them from the consumer-driven price squeeze at home.

Clearly, companies must look beyond immediate, obvious risks and learn to evaluate aftereffects that could destabilize whole value chains, including all direct and indirect business relationships with stakeholders. A thorough analysis of direct threats is always necessary—but never sufficient (Exhibit 1).

Exhibit 1

Companies are susceptible to interconnected cascades of risk.



Competitors

Often the most important area to investigate is the way risks might change a company’s cost position versus its competitors or substitute products. Companies are particularly vulnerable to this type of risk cascade when their currency exposures, supply bases, or cost structures differ from those of their rivals. In fact, all differences in business models create the potential for a competitive risk exposure, favorable or unfavorable. The point isn’t that a company should imitate its competitors but rather that it should think about the risks it implicitly assumes when its strategy departs from theirs.

Consider the impact of fuel price hedging on fares in the highly competitive airline industry. If the airlines covering a certain route don’t hedge, changes in fuel costs tend to

percolate quickly through to customers—either directly, as higher fares, or indirectly, as fuel surcharges. If all major companies covering that route are fully hedged, however, that would offset changes in fuel prices, so fares probably wouldn't move. But if some players hedge and others don't, fuel price increases force the nonhedgers to take a significant hit in margins or market share while the hedgers make windfall profits.

Companies must often extend the competitive analysis to substitute products or services, since a change in the market environment can make them either more or less attractive. In our airline example, high fuel prices indirectly heighten the appeal of video-conferencing technologies, which would drive down demand for business travel.

Supply chains

Classic cascading effects linked to supply chains include disruptions in the availability of parts or raw materials, changes in the cost structures of suppliers, and shifts in logistics costs. When the price of oil reached \$150 a barrel in 2008, for example, many offshore suppliers became substantially less cost competitive in the US market. Consider the case of steel. Since Chinese imports were the marginal price setters in the United States, prices for steel rose 20 percent there as the cost of shipping it from China rose by nearly \$100 a ton. The fact that logistics costs depend significantly on oil prices is hardly surprising, but few companies that buy substantial amounts of steel considered their second-order oil price exposure through the supply chain. Risk analysis far too frequently focused only on direct threats—in this case, the price of steel itself—and oil prices didn't seem significant, even to companies for which fluctuating costs may well have been one of the biggest risk factors.

Distribution channels

Indirect risks can also lurk in distribution channels: typical cascading effects may include an inability to reach end customers, changed distribution costs, or even radically redefined business models, such as those recently engendered in the music-recording industry by the rise of broadband Internet access. Likewise, the bankruptcy and liquidation of the major US big-box consumer electronics retailer Circuit City, in 2008, had a cascading impact on the industry. Most directly, electronics manufacturers held some \$600 million in unpaid receivables that were suddenly at risk. The bankruptcy also

created important indirect risks for these companies, in the form of price pressures and bargain-hunting behavior as liquidators sold off discounted merchandise right in the middle of the peak Christmas buying season.

Customer response

Often, the most complex knock-on effects are the responses from customers, because those responses may be so diverse and so many factors are involved. One typical cascading effect is a shift in buying patterns, as in the case of the Canadians who went shopping in the United States with their stronger currency. Another is changed demand levels, such as the impact of higher fuel prices on the auto market: as the price of gasoline increased in recent years, there was a clear shift from large sport utility vehicles to compact cars, with hybrids rapidly becoming serious contenders. Consider too how the current recession has shrunk the available customer pool in many product categories: demand for durable goods plummeted among consumers holding subprime mortgages as their access to credit shrank, and demand for certain luxury goods fell as even financially stable consumers turned away from conspicuous consumption.

Effects on a company's risk profile

Risk cascades are particularly useful to help assess the full impact of a major risk on a company's economics. Exploring how that risk propagates through the value chain can help management think through—imperfectly, of course—what might change fundamentally when some element in the business environment does.

To illustrate, let's examine how the risk posed by new carbon regulations might affect the aluminum industry. Aluminum producers would be directly exposed to such regulations because the electrolysis used to extract aluminum from ore generates carbon. They're also indirectly exposed to risk from carbon because the suppliers of the electrical power needed for electrolysis generate it too. The carbon footprint can be calculated easily and its economic cost penalty determined by extrapolation from different regulatory scenarios and the underlying carbon price assumptions. This cost penalty would of course depend on the carbon efficiency of the production process and the fuel used to generate power (hydropower, for instance, is more carbon efficient than power from

coal).

In general, large industrial companies believe they are “carbon short” in the financial sense—their profits get squeezed when carbon prices increase. Is that always true? A different story emerges from a closer look at the supply chain, which stiffer carbon regulations would change in many different ways. The cost of key raw materials, such as calcined petroleum coke and caustic soda, would increase, along with logistics costs and therefore geographic premiums. The US Midwest market premium, for example, reflects the cost of delivering a ton of aluminum to the region, where demand vastly exceeds local supply. Not all competitors in the industry would be affected alike: this effect favors smelters located close to the US Midwest, because they could then pocket the higher premium. Some suppliers might even benefit from their geographic position.

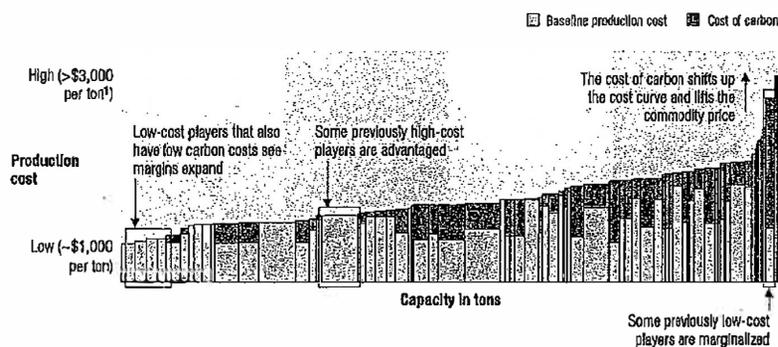
Moreover, in a carbon-constrained, tightly regulated world, aluminum becomes a material of choice to build lighter, more fuel-efficient cars. Since automobile manufacturing is one of the largest end markets for aluminum, carbon regulation could substantially accelerate demand, thus helping to support healthy margins and attractive new development projects. Clearly, a high carbon price would enhance aluminum’s value proposition—positive news for the industry.

Finally, carbon regulations would affect not only a particular company but also its competitors, changing the economics of the business. For commodity industries, the cash cost of marginal producers sets a floor price. In a world where carbon output has a price, the cost structure of different smelters would depend on their carbon intensity (such as the amount of carbon emitted per ton of aluminum produced) and local carbon regulations. It’s possible to show how any regulatory scenario could influence the aluminum cost curve (Exhibit 2). In nearly all the plausible scenarios, the curve steepens and the floor price of aluminum therefore increases. For most industry participants, especially very carbon-efficient ones (such as those producing aluminum with hydropower), a meaningful margin expansion could be expected.

Exhibit 2

Carbon regulation would reshuffle the aluminum industry's cost curve.

Aluminum industry cost curve after factoring in cost of carbon regulation



¹Dependent on regulatory scenario.

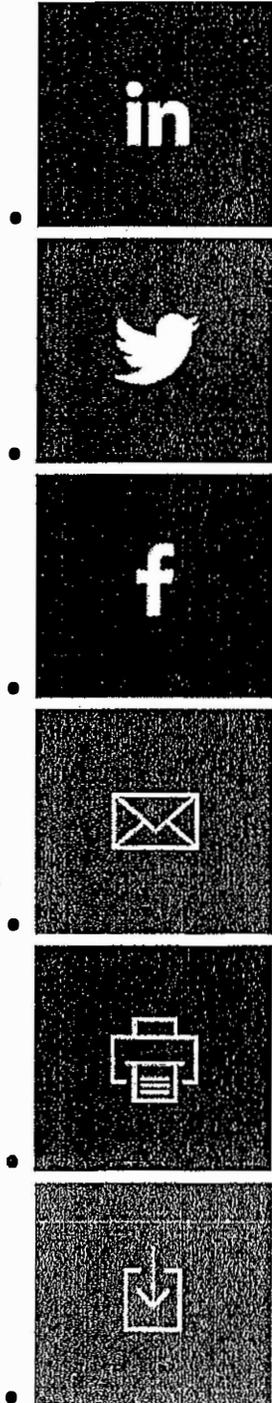
A simple risk analysis suggested that one of our clients would be carbon short and that its profits would therefore decrease under new carbon regulations. But a more extensive view of the way carbon risk cascades through the industry value chain shows that this company would actually be carbon long: as carbon prices increase, the company benefits economically thanks to its high carbon efficiency, its desirable geographic location (proximity to the US Midwest), and the potential added demand for aluminum.

Unknown and unforeseeable risks will always be with us, and not even the best risk-assessment approach can identify all of them. Even so, greater insight into the way they might play out can provide a more comprehensive picture of an industry's competitive dynamics and help shape a better corporate strategy. Thinking about your risk cascades is a concrete approach to gaining that insight.

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Risk: Seeing around the corners



McKinsey&Company

Interview

November 2016

A culture of improvement: Defining the role of scale and sustainability in building big projects

An interview with Jacqueline Hinman

Jacqueline Hinman is chairman and CEO of CH2M HILL. Founded in 1946 and based in Colorado, the global engineering company (2015 revenues: \$5.36 billion) has been involved in major projects including restoration of Mississippi ports after Hurricane Katrina, Toronto's Metrolinx Rapid Transit program, the past six Olympic Games, plus major industrial developments in India and Saudi Arabia.

In this interview with McKinsey's Tony Hansen, Hinman discusses a wide range of issues, including dealing with environmental issues, the Olympics, attracting female talent, and the impact of Brexit.

McKinsey: How would you describe CH2M's culture?

Jacqueline Hinman: CH2M always has been a purpose-driven company, focused on delivering sustainable solutions for the clients and communities we serve. Since becoming CEO, I've focused on driving a client-centric strategy to deliver on that purpose all the way through our delivery model.

Aligning around our clients also helps us to execute across engineering, design, and scientific disciplines, enabling greater innovation and exposing our people to more rewarding opportunities. That's important if we are to retain remarkable people who are motivated to make a positive difference in the world.

We are never satisfied with making incremental improvements. Our approach combines broad, global engineering-and-construction (E&C) knowledge with local stakeholder intelligence to deliver the best outcomes.

McKinsey: The United Kingdom recently voted to leave the European Union. How do you see this decision affecting CH2M's operations in Britain and Europe?

Jacqueline Hinman: It's too early to tell. The terms of withdrawal are subject to a negotiation period; it could be a few years before it is implemented. But without a doubt, Brexit creates additional uncertainty in financial markets—on top of concerns like the postrecession “new normal,” the prolonged oil-and-gas slump, and the US election.

McKinsey: CH2M has worked on a number of Olympics. Can you talk about that experience?

Jacqueline Hinman: We played a small role in Rio, and we have been involved in such global-scale events for more than 20 years. We served as the first-ever environmental advisor to the Olympics, in 1996 in Atlanta. Over the years, working with others, we made some progress in establishing governance systems and standards for environmental sustainability for big events. But it took another 14 years—the London Olympics in 2012—for the world to realize there was a much greater opportunity: Olympic organizers could also advance social and economic sustainability by considering the needs of disadvantaged groups, workers, and cash-strapped communities in a meaningful way. In what may have been a once-in-a-lifetime combination of political courage, regulatory will, and unprecedented stakeholder engagement, London 2012 set a new gold standard for the Olympics. We had a leadership role in the development consortium that delivered a six-year, \$15 billion program to design and build 30 sustainable venues and scalable infrastructure, all finished a year ahead of schedule and 10 percent below budget.

This included perhaps the largest environmental cleanup ever accomplished in Europe, transforming a 600-plus acre brownfield site that paved the way for the Olympic Park. We recycled 98 percent of the waste on site and delivered most of the materials via sustainable rail and water transport, while cutting carbon emissions in half and using 40 percent less water.

At the peak of construction, we had approximately 10,000 people on site, 70 percent of

whom used public transportation to and from work. Another 26 percent either walked or rode bicycles. Who would have imagined some 9,600 construction workers doing this day in and day out?

Of the 40,000 people who worked on the project between 2006 and 2011, many were employed locally from some of the poorest boroughs nearby. A large number of these people had been unemployed. We established and paid for a health clinic on site, which provided health screenings for about 2,000 workers each month and more than 100,000 free health-assessment and treatment visits over a four-year period.

McKinsey: Maintaining employment standards for workers is a challenge. What is CH2M doing?

Jacqueline Hinman: Certainly there are very serious concerns about worker welfare. We've worked with clients Qatar 2022 [World Cup] and Expo 2020 Dubai to improve standards for employment, safety, and worker accommodations. Since third parties typically perform much of the work in the region, we strengthened supply-chain qualification requirements for procurement and contractor selection with an inspection regime for enforcement.

To advance these efforts, we have hosted industry roundtables with the Institute for Human Rights and Business this year, and now we are piloting a new mobile application that enables workers to anonymously share real-time feedback on working conditions. We see this as a valuable program-management tool to empower workers and ensure these welfare standards are being met.

McKinsey: What do you think is the engineering-and-construction sector's responsibility with respect to the environment?

Jacqueline Hinman: Delivering triple-bottom-line returns for clients—environmental, social, and economic—demands that we also demonstrate leadership in our own operations. We were among the first in our sector to sign on to the UN Global Compact, and we just marked the 11th year of publishing our performance via the Global Reporting Initiative.

Our tenacity for sustainable solutions stands as a point of competitive differentiation for CH2M. We serve clients who share our commitment to continuous improvements that

involve incredibly complex infrastructure, conservation, mitigation, and development challenges.

For example, about 15 years ago, we started working with a major sports-and-apparel manufacturer to reduce operating costs by curtailing the use of toxic chemicals and increasing recycling. A breakthrough came when we examined the broader supply-chain implications. We worked with 300 textile suppliers in 25 countries to ensure that their manufacturing methods aligned with those efforts.

But the big idea was yet to come—a greater vision for a much bigger impact. Now, we're serving as program manager for the Zero Discharge of Hazardous Chemicals program, helping 22 of the world's leading fashion, sports, and outdoor apparel brands eliminate hazardous chemicals from their supply chains. By 2020, 11 classes of hazardous chemicals will have been eradicated from textile production; this is a huge step to elevate standards across the entire industry.

McKinsey: Are there other examples?

Jacqueline Hinman: Another idea whose time has come is the use of natural infrastructure. We are, at last, seeing a shift toward valuing natural capital—assets such as marine and plant life—as part of the solution to protect and improve ecosystems. The challenge has been developing the right regulatory, permitting, and technical frameworks to make it happen.

A classic example comes from the northeastern United States, where significant wet weather caused overflows of the community's combined storm-water and sewer systems, polluting a nearby lake. The Environmental Protection Agency mandated a conventional treatment program, a provisional fix that would have cost more than \$100 million.

However, working with a very forward-thinking county executive, we convinced regulators to petition the federal courts to pursue an innovative, more sustainable hybrid approach incorporating both gray and natural green infrastructure. Outside the United States, these types of solutions had been proved effective to treat storm water at its source, harnessing nature to restore water quality. In November of 2009, a federal judge granted approval.

It was the first settlement of its kind in the nation to endorse green infrastructure as a

storm-water-management solution. To date, the county has advanced more than 180 green and natural infrastructure projects, and the lake has made a comeback. Since then, we've partnered with industry and third-party experts, such as the Nature Conservancy, to pioneer hundreds of projects harnessing natural infrastructure.

McKinsey: How is the E&C sector doing with respect to attracting and retaining women?

Jacqueline Hinman: Both the E&C sector and the broader business community have plenty of room for improvement in reflecting real-world diversity, not only in terms of gender but also in lifestyle, social status, age, economics, ethnicity, creed, ideology, and thought.

The solution is to foster truly inclusive corporate cultures. CH2M performs well above industry averages for workforce diversity, with women and minorities comprising 31 and 14 percent of management, respectively. In addition, women account for more than a quarter of the board of directors. But we still see opportunities to do more.

We have to play an active role to develop the next-generation workforce, starting at an early age and investing in STEM [science, technology, engineering, and math] education. Our CH2M Foundation supports partnerships with organizations targeting underrepresented populations at all career stages. We connect young students with college mentors and young professional role models—often some of the brightest female and minority engineers in the making.

About the author(s)

Tony Hansen is the director of McKinsey's Global Infrastructure Initiative;
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Article

November 2016

Taking conservation finance to scale

By Ryan Davies, Hauke Engel, Jürg Käppeli, and Todd Wintner

Environmental projects are woefully underfunded. Improving their risk-return profiles and structuring larger investment products could unlock private capital to narrow the gap.

Environmental-conservation projects face a dramatic shortage of funds. Estimates indicate that \$300 billion to \$400 billion is needed each year to preserve and restore ecosystems but that conservation projects receive just \$52 billion, mostly from public and philanthropic sources.¹ Some asset managers and conservation experts have suggested that private investors could close more than half the gap by profitably funding enterprises or projects in areas such as sustainable food and fiber production, habitat protection, and water quality and conservation.²

This is an attractive prospect—except that conservation can be a slow and risky business. It can take decades to realize, verify, and capitalize on conservation benefits; only the most patient investors will wait that long. Some projects are derived from compelling but unproven concepts that investors are understandably reluctant to back. Many more are based on proven concepts yet still operate in challenging circumstances and generate unreliable revenues. We routinely hear about conservation projects for which the investment risks and expected returns are misaligned: imagine an equity investment for which the level of risk is comparable to venture capital but the returns are closer to those of a stake in a successful, established company.

These conditions make it hard for project developers and fund managers to attract private capital. The good news, though, is that developers and fund managers have

techniques at their disposal for creating projects with the size, stability, and potential that mainstream investors seek. Here we look at some problems that discourage private investment in conservation and offer our ideas for how to overcome them.

Acknowledging the challenges in conservation

Conservation finance faces certain problems that affect the wider impact-investing market, of which it is a segment. These problems include a lack of widely accepted standards for measuring impact, a shortage of financial-management experience among project developers, the high transaction costs of investing in small projects, and an abundance of early-stage project concepts that are too speculative to interest all but the most risk-tolerant investors.

Three big challenges have more to do with the specific traits of conservation. The first of these challenges is generating sizable cash flows shortly after a project begins. Some projects only start producing cash flows after years of investment. Others have benefits that are hard to monetize, such as the economic gains that come from preserving biodiversity or from mitigating the risk of future losses. Preserving and rebuilding coastal wetlands, barrier islands, and oyster reefs, for example, can reduce damage from storms. When many parties benefit from a restoration project, though, it can be hard to get some of them to fund the project up front or to pay for the services it provides.

The second challenge is the inherent complexity and unpredictability of natural systems. Even with sophisticated scientific knowledge, it can be difficult to predict the conservation outcomes from managing a natural system in a particular way. This matters because natural systems impose variability on business activities, such as food and fiber production, that depend on those systems. As a result, revenues from conservation projects can be uncertain, whether those revenues are linked to conservation outcomes or to sales of goods and services.

The third challenge is the multifaceted nature of many questions related to land use, particularly its objectives and its governance. Settling these questions requires relevant specialists—ecologists, project managers, lawyers, public-policy analysts, government officials—to agree on the conservation principles for a project. This can be difficult. Most conservation projects depend on certain uses of land or water, which are scarce resources

that might be used in multiple ways. Pursuing optimal conservation outcomes can be politically unpopular, preclude other socially beneficial uses of the land, or generate less profit than other uses (for instance, agriculture, resource extraction, or real-estate development practiced with conservation as a low priority).

Many projects are subject to further risks because many stakeholders (government at multiple levels, local communities, and private-land owners, to name a few) impose constraints that can overlap or even conflict. In some countries, national, regional, and local authorities each have jurisdiction over different aspects of how a piece of land is used. And if a project depends on policy mechanisms such as carbon prices to generate income, the possibility that those policy mechanisms will change creates more risk.

How conservation can attract more private investment

Project developers and fund managers can take the lead on several actions that will help attract private capital for conservation projects, first from impact-oriented investors and then, increasingly, from mainstream investors as well. Impact-oriented investors can also support the conservation-finance sector using their knowledge, relationships, and resources other than capital.

Elevate the dialogue on project risk and return to be more open, objective, and structured. Because many risks can affect conservation projects, developers must start by identifying risks comprehensively. This often requires consultation with a range of stakeholders. The Water Funder Initiative, for example, has collected ideas from policy makers, scientists, industry executives, conservationists, and others about the risks and opportunities associated with investing in water solutions.³

Developers should also approach investors with a realistic and well-structured assessment of risks and returns and how these translate to financial measures. We often see conservation projects that have commercially unattractive risk-return profiles because their risks are high relative to their expected cash flows. Sometimes such projects are pitched as market-rate investments, which diminishes their credibility. Fund managers and financial intermediaries can help developers structure multiple options

for investing in a project, including options that are more likely to interest investors who seek market-level returns in addition to conservation impact. Financial professionals can also help identify investors who are qualified to evaluate the risks and returns associated with complicated investments such as conservation projects.

Mitigate risks and boost returns. Project developers and fund managers can use various methods to improve a project's expected risk-adjusted returns (exhibit). Management and operational risks, for instance, can be mitigated by assembling a team with all the necessary skills in science, business, regulatory policy, cultural affairs, and other areas.

Exhibit

Common risk-mitigation strategies can reduce the default rates and investment costs of conservation investment products.

Risk-mitigation strategy		Key aspects
Operational assistance		Assistance with technical, legal, and financial matters can improve project quality and success rates Typically provided by development finance institutions (DFIs) or foundations
Staged risk tranches	Debt	Fungible, liquid collateral can mitigate credit risk Underlying problems (eg, uncertain land rights) can sometimes be addressed
	Equity	Demonstrating stable, predictable cash flows can mitigate risk Works especially well in established sectors such as forestry
Insurance/hedging	Private insurance	Insurance against catastrophic losses can be expensive for new projects or those without established risk models
	Futures/forward trades	Can be used to hedge against volatile commodity prices in liquid markets Can be expensive or challenging if timing of cash flows is unclear
Guarantees		Can take the form of loss guarantees that assure investors they will receive a percentage of their principal in cases of default Can be provided by DFIs, foundations, or governments

McKinsey & Company | Source: Credit Suisse; McKinsey analysis

One nascent but promising concept for improving risk-return profiles to suit private investors is blended finance. This involves carving out investment tranches with less favorable risk-return profiles so they can be funded by so-called concessional capital from public or philanthropic sources. Other tranches can then have risk-return profiles that fit private investors' expectations, making it possible to raise funding for projects

whose overall risk-return profiles might otherwise hold little appeal.

Fund managers continue to explore old and new models for blended finance.⁴ Examples include the following:

- *Early-stage grant making* by nongovernmental organizations can fund the development of conservation projects. This not only reduces the amount of capital needed from subsequent investors but also lowers the investment risk. Grants from NatureVest, for instance, were essential to the development of the Stormwater Retention Credit Trading Program in Washington, DC.
- *Donor-funded guarantees* are an established mechanism exemplified by the US Agency for International Development's commitment to guarantee 50 percent of the losses on up to \$133.8 million of loans by Althelia Ecosphere's Althelia Climate Fund.
- *Junior debt or equity* has a lower-priority claim to assets and earnings than other loans or securities. With this model, the Global Environment Facility used \$175 million to mobilize more than \$1 billion of private capital for climate- and environment-related projects.

Structure lower-cost, large-scale investment products. High financing and project costs cut into the returns from conservation enterprises, making them less attractive to private investors. But fund managers and project developers can lower their costs in several ways. One is establishing routine processes. A good due-diligence checklist for evaluating projects can help fund managers remove impractical ones from their pipelines early on so they can devote more time and money to better ones. Project templates, such as Encourage Capital's blueprints for investing in sustainable fisheries or California's conservation-easement template, can accelerate the process of developing and structuring projects while helping investors avoid high-risk concepts.⁵

Structuring larger investment products could also help fund managers tap more private capital while spreading out the costs of creating, marketing, and distributing a fund. One approach is to bundle relatively small projects of a similar type into an ordinary investment vehicle, using a common deal template to bring down costs. The Forestland Group, for example, has set up several real-estate investment trusts for sustainably

managed timberland. Fund managers might also aggregate different but related projects—such as forestry, agriculture, and ecotourism projects in the same national park—into a single diversified product.

Another scaling approach is to create investment products with familiar, widely used structures. For example, a private equity-style conservation fund could direct as much as \$200 million toward 10 to 20 projects in established markets such as sustainable agriculture, ecotourism, and sustainable forestry. Sovereign institutions could issue bonds covering a large ecosystem, use the proceeds to finance conservation there, and repay the debt with revenues from park-access fees and other sources.

Incubate new conservation concepts. As proven conservation models are being standardized and applied on a large scale, project developers also need to create new models that will generate investment opportunities in the future. Entrepreneurs working on novel conservation approaches often need more than money to get projects up and running. Assistance with technical and operational matters can be at least as valuable. To support innovative work in conservation, foundations, nongovernmental organizations, and investors could establish incubators to help start-ups get both the financing and the knowledge they need.

Incubators could perform a matchmaking role as well, connecting investors with projects that suit their appetites for risk and their expectations for financial returns and environmental impact. Such incubators could also serve as a proving ground for new financing ideas such as conservation-impact bonds, which are analogous to social-impact bonds, or insurance products that monetize the risk-mitigation benefits of conservation projects.

Factors such as low interest rates, falling returns on equity investments, and burgeoning demand for environmentally friendly goods and services favor an increase in conservation finance. Conservation experts and fund managers must now win the confidence of mainstream investors by enhancing their management and financing methods. Their success could catalyze significant growth in conservation finance, allowing investors to improve their returns and mobilizing more private capital to protect ecosystems around the world.

This article is adapted from Conservation finance—From niche to mainstream: The building of an institutional asset class, published by Credit Suisse and the McKinsey Center for Business and Environment in January 2016.

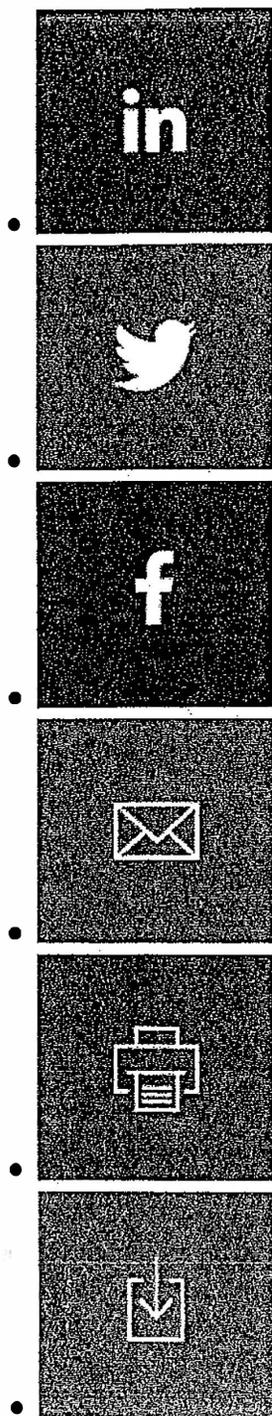
1. Fabian Huwyler et al., *Conservation finance: Moving beyond donor funding toward an investor-driven approach*, a joint report from Credit Suisse, World Wildlife Fund, and McKinsey & Company, 2014.
2. *Investing in conservation—A landscape assessment of an emerging market*, a joint report from EKO Asset Management Partners and NatureVest, November 2014, naturevesttnc.org.
3. *Toward water sustainability: A blueprint for philanthropy*, Water Funder Initiative, March 2016, waterfunder.org.
4. *Blended finance vol. 1: A primer for development finance and philanthropic funders*, a joint report from the Organisation for Economic Co-operation and Development and World Economic Forum, September 2015, weforum.org; and *GEF innovations in blended finance: A summary*, Global Environment Facility, 2015, thegef.org.
5. Alex Markham, Trip O'Shea, and Kelly Wachowicz, *Investing for sustainable global fisheries, Encourage Capital*, January 2016, investinvibrantoceans.org.

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Taking conservation finance to scale



This Government Bond Insures Against Failure

The first-ever environmental impact bond gives an agency some of its money back if its idea doesn't pan out.

BY: [Liz Farmer](#) | November 10, 2016

As the drive for accountability in government spending increases, many are looking for ways to keep from paying the full price for programs that don't work.

In Washington, D.C., that desire has led to the first-ever environmental impact bond, issued this fall by DC Water, the city's water and sewer authority. The \$25 million bond will pay for new, green infrastructure like rain gardens and permeable pavement to reduce stormwater runoff.

But if the projects don't work as expected, that's where the new financing structure comes in. Under the terms of the bond, which DC Water sold directly to Goldman Sachs Urban Investment Group and the nonprofit Calvert Foundation, the utility stands to get a multimillion discount on its total borrowing costs if the project doesn't meet a certain threshold.

It's essentially an insurance policy on the project's effectiveness. Here's how it works: After five years, the new infrastructure will be evaluated. If stormwater runoff isn't reduced by at least 18.6 percent, investors will owe DC Water a \$3.3 million "risk share" payment. The payment represents a near-full refund of the 3.43 percent interest rate payments DC Water made during the first five years of the bond. After that, the bonds would likely be refinanced into 25-year bonds. DC Water would also drop green infrastructure projects and go back to so-called gray ones (like pumps and water tunnels) to reduce runoff.

So what's the incentive for Goldman Sachs and the Calvert Foundation to buy these bonds? If the reduction of stormwater runoff exceeds expectations -- if runoff is reduced by more than 41.3 percent -- the investors get a bonus payment of \$3 million from DC Water after five years. The bonds would then still refinance into 25-year bonds.

Although the deal took two years to iron out, DC Water's CFO Mark Kim said it's a structure that could easily be copied by other utilities because it is still, at its core, a basic market transaction. This makes environmental impact bonds different from so-called social impact bonds or pay for success projects, which are not bonds at all but are negotiated contracts between a private financier and a government. These "bonds" finance certain projects that aim for an agreed-upon outcome, such as reducing recidivism among a certain prison population. The financier gets paid back only if the project outcomes are met after a certain period of time.

For those reasons, pay for success projects are very difficult to replicate. "We structured this as a debt instrument rather than a [pay for success] service contract, so it is very scalable, very transparent and very accessible," said Kim. "Utilities know how to issue debt. We've just structured the deal so that they can look and replicate."

While the environmental impact bond is getting interest from other governments, and was even held up by the White House as a model, it has its critics. Dan Kaplan, who manages a \$4 billion debt portfolio for the King County, Wash., Wastewater Treatment Division, said he isn't convinced the environmental

impact bond is a better deal because of the "exceptionally high interest rate" DC Water is paying the first five years of the deal. Typically, the shorter the terms of the bond, the lower the interest rate. Under a regular five-year bond, Kaplan said, DC Water would likely pay less than 2 percent instead of 3.43 percent.

Also, given that rain gardens and permeable surfaces aren't new, untested technology, Kaplan doesn't see the point in DC Water hedging its bets that the projects won't do their jobs. "If there's some new technology that needs to be tested and there simply aren't the resources within the utility to commit the personnel and technology to do it," he said, "then perhaps [this financing mechanism] could be a tool."

But Kim said comparing the bond's terms with a five-year bond's terms isn't an apples-to-apples comparison. Although the deal does refinance after five years, it is structured as a 30-year deal and therefore is assigned an interest rate comparable to the utility's typical long-term borrowing cost. In addition, Kim said, a typical five-year bond doesn't "provide a risk transfer or downside protection if green infrastructure does not work, which is the whole point of the deal."

Beth Bafford, investments director for the Calvert Foundation, said she hopes the DC Water deal spurs a new field of social investing that essentially splits the difference between a pay for success project and a traditional bond. Investing in the former means returns might not be realized. Investing in the latter is far less risky -- and less exciting.

"We've looked at a few pay for success deals," says Bafford. They are such uncertain, complex systems that it's "hard to determine what's causing the outcome. In the environmental space, you can measure it, look at it, it's more of a science. The hope is it'll help investors who are more risk averse get into the social contracting space."

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