

Charting New Waters

State of Watershed Payments 2012

Executive Summary for Business

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Editor's Notes

This is a special report, developed specifically for a business audience, that builds upon data and analysis first presented in a more comprehensive report from Forest Trends' Ecosystem Marketplace on the topic of payments for watershed services – *Charting New Waters: State of Watershed Payments 2012*. In *Charting New Waters*, we track the size, scope, and outlook for investments in watershed services and in the ecological infrastructure from which they flow, focusing on transactions between investors and watershed service providers.

The full report is freely available and can be accessed here:

http://www.forest-trends.org/documents/files/doc_3308.pdf.

This Executive Summary reviews findings from this report that are of specific relevance to private sector decision-makers to offer a benchmark for business investments in nature-based solutions to the water crisis. Both this Executive Summary and the full report rely on proprietary data collected via surveys, interviews, and desk research covering over 300 watershed investment programs in more than 30 countries.

Readers of this report are encouraged to also read the broader report with the understanding that the investment strategies and market opportunities discussed in this special report are intended to illuminate the private sector's small but growing role in global watershed investment activities. The broader context should be carefully considered when weighing opportunities for investment or other commercialization of ecosystem services.

About Forest Trends' Ecosystem Marketplace

Ecosystem Marketplace, an initiative of the non-profit organization Forest Trends, is a leading source of information on environmental markets and payments for ecosystem services. Our publicly available information sources include annual reports, quantitative market tracking, weekly articles, daily news, and news briefs designed for different payments for ecosystem services stakeholders. We believe that by providing solid and trustworthy information on prices, regulation, science, and other market-relevant issues, we can help payments for ecosystem services and incentives for reducing pollution become a fundamental part of our economic and environmental systems, helping make the priceless valuable.

Ecosystem Marketplace is financially supported by organizations such as the Skoll Foundation, the Swiss Agency for Development and Cooperation, the International Climate Initiative (Germany), the Gesellschaft für Internationale Zusammenarbeit/Federal Ministry of Economic Cooperation and Development (Germany), the Gordon and Betty Moore Foundation, and PROFOR (the World Bank's Program on Forests).

Forest Trends is a Washington, DC-based international non-profit organization whose mission is to maintain, restore, and enhance forests and connected natural ecosystems, which provide life-sustaining processes, by promoting incentives stemming from a broad range of ecosystem services and products. Specifically, Forest Trends seeks to catalyze the development of integrated carbon, water, and biodiversity incentives that deliver real conservation outcomes and benefits to local communities and other stewards of our natural resources. Forest Trends analyzes strategic market and policy issues, catalyzes connections between producers, communities and investors, and develops new financial tools to help markets work for conservation and people.

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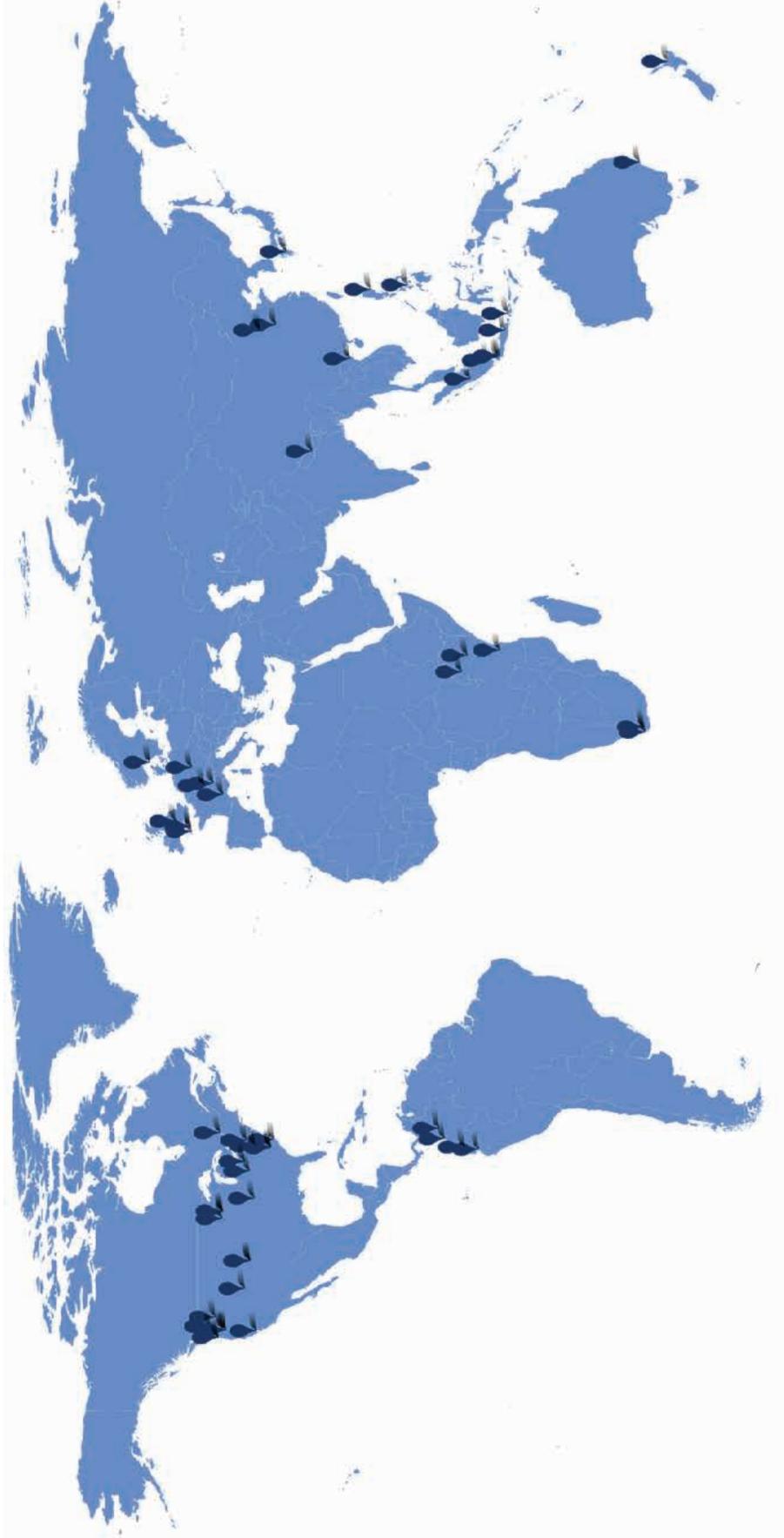
We also wish to thank Michael Jenkins, President of Forest Trends, for his guidance and the entire staff of Forest Trends for their continued support and contributions.

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Map 1: Mapping Business Watershed Investments, 2011

Active projects in 2011 (the latest year for which full data is available) in which a business either finances investments in watershed protection or provides “natural infrastructure” services to buyers.



Source: Forest Trends, 2013.

Glossary

“Beyond the fence”: Here, referring to water resource management areas not at the level of direct operations, but rather existing at a landscape level surrounding operations or within the business supply chain.

Green infrastructure: Broadly, a system of approaches and design elements that harness or mimic natural processes in order to achieve clean water supplies (generally with a focus on stormwater retention or wastewater treatment), protect or restore ecosystem functions, and capture co-benefits such as clean air or wildlife habitat. Green infrastructure approaches range from site-level green roofs, bioswales, or rainwater harvesting systems to landscape-level enhancement and preservation of landscape elements such as forests or wetlands.

Investments in watershed services (“IWS”): Transactional arrangements (in cash or in-kind) between two or more parties that compensate a provider for restoring, maintaining, or enhancing the natural infrastructure that maintains clean water supplies.

Natural capital: The natural “stock” of ecological systems that provide ongoing flows of environmental goods and services such as water filtration, crop pollination, or climate regulation.

Natural capital accounting: The inclusion of the total stocks and flows of natural resources and environmental services for a defined region, in physical or financial terms, within a government or corporate accounting framework.

Natural water infrastructure: Natural systems like wetlands, forests, or grasslands that underpin the global water system and perform important functions - such as pollution filtration, water storage, or protection against flooding - that are often supplemented or replaced by engineered infrastructure.

Nutrient mitigation banks: A for-profit entity that achieves reductions of nutrient pollutants such as nitrogen and phosphorus through ecological restoration or protection activities and then markets these reductions as tradable credits. Entities needing to offset pollution impacts can purchase these credits to meet regulatory compliance.

Water quality credits: A tradable credit, usually measured in pounds of pollution reduction, used to offset impacts and/or meet regulatory compliance with clean water standards.

Watershed: An area of land drained by a river system or other body of water, also referred to as a “catchment” or “basin.”

Watershed services: The benefits to society provided by healthy natural systems (like forests or wetlands), such as aquifer recharge, flow regulation, erosion control, and water purification.

Water stewardship: Broadly, an approach to business water management and reporting that considers water use and impacts across the value chain and incorporates goals and actions related to watershed management, stakeholder engagement, public policy, and transparency into a company’s strategy on water.

Executive Summary

I. Introduction

In 2013, the World Economic Forum rated the risk of a global water supply crisis as a greater threat than worldwide food shortages or the diffusion of weapons of mass destruction, both in its probability of occurring and the seriousness of impacts.¹ For business, water security poses an undeniable challenge in

the coming decades: nearly three-quarters of Global 500 companies surveyed this year say that their business faces substantive water risk.²

Any follow-through on these risks most often focuses on direct operations, improving water use efficiency and monitoring immediate impacts. Yet efficiency, while valuable, is not enough to truly manage risk: at

BOX 1: KEY FINDINGS ON PRIVATE SECTOR UPTAKE OF WATERSHED INVESTMENTS

- Business investments in natural infrastructure deliver critical finance and innovation in many parts of the world. While public-sector spending is the primary source of watershed finance in China and the United States, the private sector drives the majority of projects in the European Union (“EU”), Africa, and Southeast Asia. Over time, the private sector has invested a reported \$94-100 million³ in watershed conservation or restoration activities.
- The beverage, manufacturing, and utilities sectors are at the leading edge of activity, addressing water risk head-on through *investments in watershed services (“IWS”)*.⁴ Many of these early actors report multiple benefits beyond enhanced water security, including cost abatement and improved relations with local communities.
- We find evidence of a policy shift to “natural infrastructure” approaches in many countries. Regulatory, accounting, and tax systems are being restructured to create both incentives and hard obligations to invest in the natural systems that deliver clean water and increase resilience to climate/disaster risk.
- Investment generally flows from the private sector to projects on private and public lands. But some firms will identify new business opportunities not as buyers but as natural infrastructure providers – offering environmental engineering expertise, taking advantage of incentives and compensation mechanisms offered by government, and even (in the USA) entering water quality trading markets as offset credit developers.
- Partnerships with the public sector and community organizations are an increasingly popular approach for sharing investment- and implementation-related risks. These models help business navigate local dynamics and stakeholder considerations that are key to successful investments. Evidence also suggests that business involvement leads to greater project accountability.
- A lack of widely accepted metrics, project guidance, and clear pathways for participation is likely a disincentive for many businesses and a factor slowing down existing projects. Greater sharing of experiences and methodologies and assistance from the public and non-profit sectors in creating enabling policy frameworks and project development tools will facilitate business involvement.

¹ World Economic Forum, 2013.

² CDP, 2013.

³ All amounts are in US Dollars, unless otherwise noted.

⁴ Terms in *blue italics* are defined in the *Glossary* on page V.

current rates of improvement, improving water use efficiency will only close the global supply-demand gap by an estimated 20% by 2025.⁵ Meanwhile, supply chain issues and larger landscape threats go mainly unaddressed.⁶ **Just three percent of businesses are tackling risk at the watershed level and only four percent within the supply chain**, compared to nearly two-thirds who have set goals for water management in direct operations.⁷

It is not always clear what options exist for business when it comes to *water stewardship* strategies. Water risks and dependencies “*beyond the fence*” are complex. They’re difficult to measure and difficult to manage. And while a company-wide “blanket” policy will fail to fit different local contexts, a business that thinks only at the facility level will miss key threats and opportunities beyond the fence line.

This report benchmarks companies taking a landscape-scale approach to water risk – looking beyond direct operations to the larger watershed context. Business leaders from **Coca-Cola** to **SABMiller** to **Sony** are experimenting with *natural infrastructure* investments that address many of the operational

risks at the top of their lists – including supply disruptions and emerging regulations – while saving money, increasing resilience to climate and natural disaster shocks, and improving relations with local communities. These efforts are known as investments in watershed services (“IWS”).

Private Watershed Investments 101

By investing in the maintenance or restoration of healthy ecosystems that support water quality and availability, an operation can reduce its exposure to water supply disruption and engage productively with other water users in the community.

At the core of these projects is the recognition that natural systems can complement or substitute for engineered infrastructure. Forests or wetlands, for example, can filter out water pollution, regulate stream flows, recharge aquifers, and absorb flooding, limiting the need for “grey” (i.e., engineered) infrastructure to perform these functions (Box 2). These kinds of benefits are collectively known as *watershed services*, as seen in Figure 1, where downstream water users make payments to an upstream community to ensure the

BOX 2: WHAT ARE WATERSHED SERVICES?

Healthy watersheds can do much the same work as a water treatment plant and other engineered infrastructure – without the expensive equipment and with added benefits like wildlife habitat conservation and carbon sequestration – but we tend to take these services for granted. For example, consider the watershed services provided by healthy forests:

- **Filtration of nutrients and contaminants:** Forests act as natural “filters” that can improve water quality by trapping eroded soils and pollutants.
- **Flow regulation and water supply:** Forests act as natural “sponges” that absorb water, recharging groundwater supplies, reducing flood risk, and maintaining stream flows at healthy normal levels.
- **Aquatic productivity:** The quality of fisheries is closely linked to the conditions of adjacent upstream watersheds. In other words, what happens on the ridges ends up on the reefs.

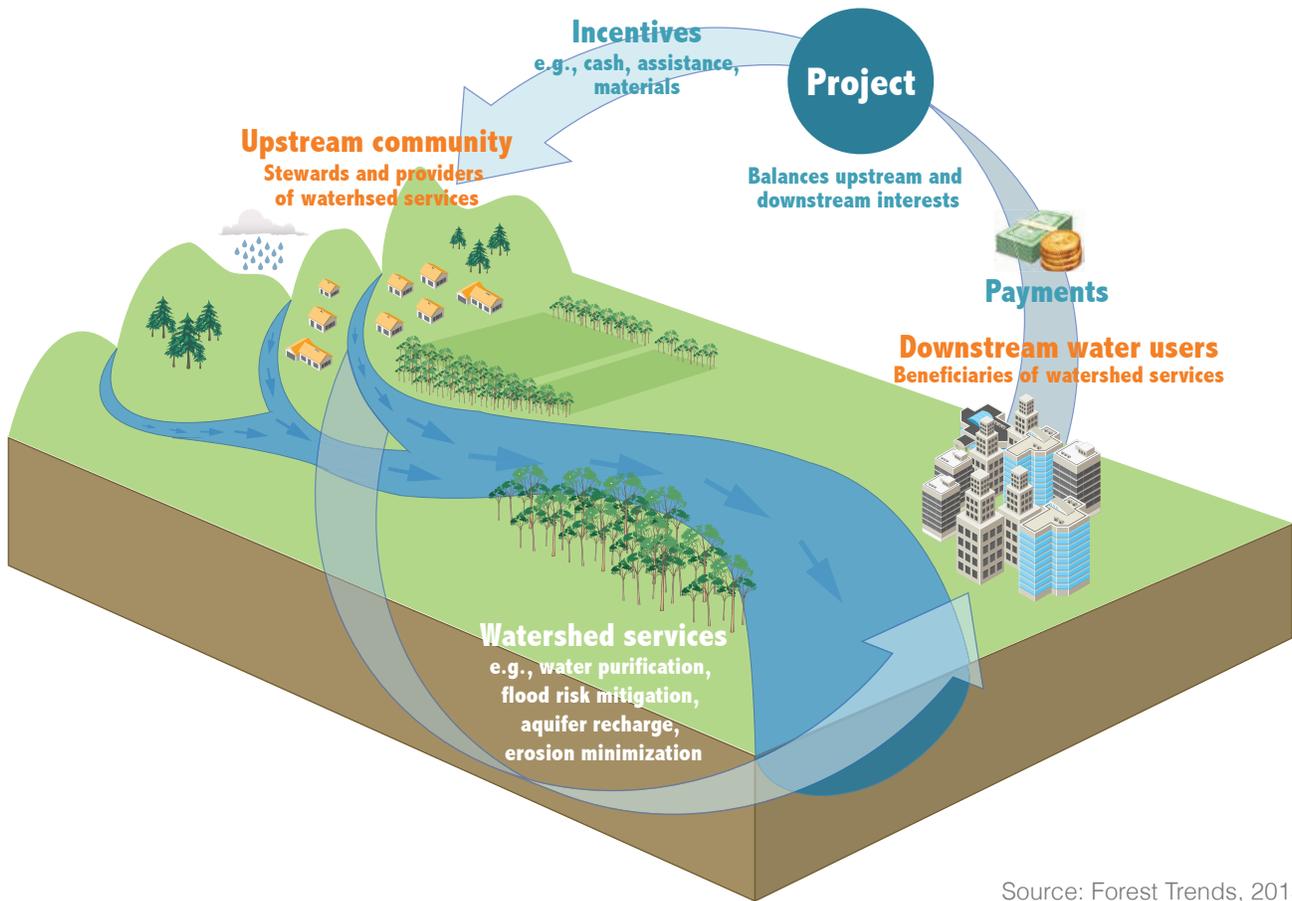
Why are the benefits of healthy watersheds so expensive to artificially “engineer”? Because they support a complex network of ecosystem services, like plant pollination or flood protection, each with their own unique value to ecology and economy, and some of which (such as plant pollination) society can’t reproduce with existing technology. Also, unlike a treatment plant or steel pipe, nature-based solutions don’t require outside “subsidies” of materials or energy.

⁵ Addams, et al., 2009.

⁶ CDP, 2013.

⁷ Ibid.

Figure 1: Watershed Investment Projects: An Example



Source: Forest Trends, 2013.

delivery of certain “services,” such as reduced flood risk.

An investment in watershed services approach is often more cost-effective than traditional engineered infrastructure solutions such as dams or water treatment facilities. From an environmental perspective, projects that promote healthy watersheds provide extra benefits like habitat protection, carbon sequestration, and increased incomes for local producers – benefits that “grey” infrastructure can’t offer.

In practice, the nature of investments varies according to an investor’s specific goals and context. One business may decide to partner directly with landholders in source water zones, while another prefers to contribute to a public watershed restoration fund that handles the management decisions. Ultimately, IWS require a water stewardship perspective that considers regulatory and institutional frameworks, local politics, and stakeholder concerns, the nature of environmental problems to be addressed, and the suite of management interventions that are locally feasible.

II. Global Overview: Private Investment Small but Scalable

Since Ecosystem Marketplace began tracking watershed investments in 2008, the number of active initiatives has doubled. In this brief, we review business performance and identify key trends and opportunities for the private sector in the IWS space. For a more comprehensive look at global trends, please consult the full *State of Watershed Payments 2012 report*.⁸

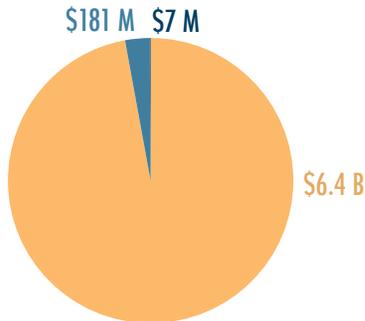
The big picture: Public spending dominates

Globally, more than \$8 billion is invested each year in watershed restoration and protection. Nearly all of this spending comes from the public sector, foundations, and non-profit groups, investing on behalf of the public benefit (Figure 2).

The Chinese government represents the lion’s share of all investments: central, provincial, and local governments

Figure 2: Public Good Payers Behind Majority of Watershed Investments in 2011
(% Share of \$ Million)

Global Watershed Investments in 2011



Excluding China



-  Public good payer
-  Beneficiary pays
-  Polluter pays

Notes: Here, investments are broken out by the type of funder: beneficiaries (like a downstream city or business); polluters compensating for their impacts (like factory offsetting impacts from its polluted effluent), and public good payers (an organization that doesn't directly benefit from the project, but funds it on behalf of general welfare – usually a government or an NGO). We exclude China – which comprises more than 90% of global investments and skews the data significantly – in the chart on the right to more clearly indicate global trends.

Source: Forest Trends, 2013.

spent \$7.5 billion in 2011 alone on “eco-compensation.” The extreme stress of several decades of break-neck extractive economic growth has taken its toll on the country's water resources. In response, the Chinese government is throwing its considerable weight behind a raft of regulatory and financial instruments to restore degraded lands, compensate for detrimental effects of economic growth, and guide sustainable development in the future.

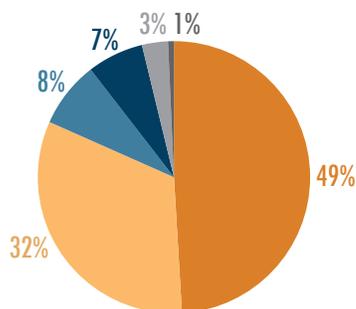
For business in China, eco-compensation has meant stricter enforcement of regulations, mandatory

relocation of operations, and new environmental fees and levies – but also assurance that the country's long-term water problems are being taken seriously by policy-makers.

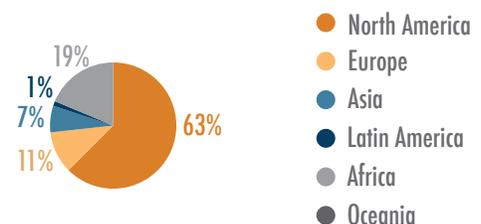
Elsewhere, the share of funding is more balanced, with public and civil-society funding accounting for about two-thirds of investments globally when China is excluded (Figure 2). Also, we find large-scale public spending programs in Australia, Mexico, South Africa, Ecuador, and Costa Rica, alongside smaller projects engaging a range of actors and investment vehicles.

Figure 3: Investment Values Concentrated in North America and Europe in 2011
(% Share of \$ Millions)

Share of Business Watershed Investments by Region, Historically



Share of Business Watershed Investments by Region, in 2011



Source: Forest Trends, 2013.

Business contributions: Outsized impacts relative to scale of investment

Business was involved in a quarter of all active watershed investment initiatives in 2011, but private sector funding itself represents less than 1% of total transactions. A handful of very large investment programs by government dominates transaction figures, but behind those numbers, business is a partner in financing a quarter of projects and a key catalyst for action in many smaller-scale efforts. In the EU, Africa, and Southeast Asia, the majority of projects have a business as their primary supporter. Globally, North America, and Europe account for the greatest share of business investments, followed by much smaller shares in Latin America and Asia (Figure 3).

Annual spending by the private sector on watershed projects is conservatively valued at an estimated \$19-26 million each year and totaled at least \$94-102 million between 1981 and 2011 (Table 1).⁹ In terms of impacts, business has collaborated on watershed investments delivering finance for the restoration and protection of more than 246,000 hectares critical to water supplies each year – an area roughly twice the size of the city of Los Angeles – via land purchases, easements, payments for land management on private and public property, and other forms of funding for landscape conservation.

Table 1: Global Snapshot:
Business Watershed Investments

Annual investments	\$19-26 million
Total investments, 1981 – 2011	\$94-102 million
Area of land protected each year by projects involving business	246,090 hectares

Source: Forest Trends, 2013.

III. Regional Patterns: Business Demonstrates Leadership in Europe, the USA, Africa, and Southeast Asia

Globally, businesses in North America and Europe account for the greatest share of business investments, followed by much smaller shares in Latin America and Asia (Figure 3). In the EU, Africa, and Southeast Asia, the majority of projects report a business as their primary supporter.

Regionally, some interesting patterns emerge in our tracking. While Figure 3 shows that Africa accounts for only a small share of the global investments by business, watershed investments by business are very important on that continent. Private sector investors are involved in 80% of Africa-based projects tracked and are the only source of funding for watershed improvements in two out of three projects. Business investments in the region come largely from multinationals like SABMiller, Coca-Cola, and Woolworths. But local companies – from a brewery in Uganda, to hoteliers in Kenya, and South African insurance company Sanlam – play a critical role. Another six projects currently in development across the continent report initial private sector engagement.

A similar picture emerges in Southeast Asia, where eight out of thirteen projects tracked are backed primarily by private sector funders. That's a stark contrast to nearby China, where massive government programs dominate.

Regional differences in investment activity tend to be a product of varying policy and institutional contexts (Box 3). Where policy drivers exist, legal/regulatory frameworks are amenable, and government is open to partnership, projects are more likely to emerge.

Manufacturing, beverage, and utilities lead; mining and apparel on the sidelines

Our research finds companies in the manufacturing, beverage companies, and utilities sectors leading the field in watershed investment activity, both in terms of the number of projects implemented and total dollars invested.

⁹ Information on watershed investments globally is scattered, rapidly changing, and sometimes difficult to confirm. In all cases our estimates of market values err on the conservative side. Transaction information can be especially difficult to obtain – data on project spending was available in 2011 for an estimated 52% of projects discussed in this report. Thus, estimates of market size should be considered as a lower bound: we do not attempt to extrapolate market size for all existing projects, but simply report what we can verify.

BOX 3: REGIONAL POLICY TRENDS: WHAT BUSINESS NEEDS TO KNOW

- **ASIA:** The **Chinese** government is very concerned about water, appreciating that the long-term availability of resources, increasing pollution, and water-energy bottlenecks all threaten continued economic growth. An annual \$7.5 billion in “eco-compensation” payments translates into stricter enforcement of regulations, potential relocations, and environmental fees for businesses, but also incentives for compliance and the promise of increased water security. Virtually all investments have come from the public sector to date, although recently the Asian Development Bank has expressed interest in courting private sector partners, and the country is slowly opening to outside actors like environmental non-governmental organizations (“NGOs”).

On the other hand, there is very little watershed investment action to be found in **India**, despite the country’s tremendous water risk. With massive energy demands projected by 2050, the country is nearing a “choke point” with its water resources. But so far, IWS-friendly policy support is lacking.

Vietnam’s new national compensation law, which requires major water users to pay a fee reflecting their dependency on watershed services, is being eyed by other countries in the region as a model to emulate. However, a recent review by Pham et al. (2013) suggests a number of flaws in the program, including difficulties enforcing payments and challenges for communities in establishing legal status to enter into contracts.

- **LATIN AMERICA:** Water conservation trust funds are booming in the region, with more than 30 expected to be up and running by 2015, driven largely by the Latin American Water Funds Partnership. Funds offer increased transparency and control to funders, while enabling conservation and planning at a larger scale. Policy-makers in Andean countries are also increasingly proactive on water, with a raft of new laws in **Colombia, Peru, and Ecuador** aiming to strengthen compensation requirements and incentivize watershed stewardship. It is likely that businesses will be expected to share in the costs of stronger resource protections.

Intensive hydropower development in the Amazon (especially projects financed by Brazilian and Chinese national development banks) and large mining projects in the Andes are meeting a wall of protests and bad press, delaying projects and increasing costs. Pressure to implement social/environmental safeguards, including watershed frameworks for planning and management, is likely to grow.

Businesses operating in the region need to be aware of their language, as regional concerns about commoditizing nature are strong. Emphasis on a culture of reciprocal engagement and community stewardship is more likely to be welcomed than the language of market mechanisms or “payments for ecosystem services.”

- **NORTH AMERICA:** Water quality trading is on an upward trajectory in the **United States**, with several big new markets coming online, tightening water quality standards all over the country, and new revenue opportunities for entrepreneurs. There’s been a big uptick in interest in “*green infrastructure*” after several recent high-profile disasters and rising costs of stormwater controls. This has translated into action on a few fronts: (i) city-level planning and stormwater fee introductions, (ii) reforms to public infrastructure funding decisions, and (iii) calls for restoring and protecting green infrastructure in coastal areas. Businesses that don’t get ahead of the curve on stormwater can expect a steep increase in compliance costs driven by municipal policies (such as stormwater management fees) and Total Maximum Daily Load regulations set by the US Environmental Protection Agency.

In the US West, more sophisticated market infrastructure for volumetric offsets is developing, serving both voluntary buyers and mandatory groundwater mitigation markets in the Pacific Northwest. Drought and scarcity in the West is also driving restrictions on use in some cases, such as limits on groundwater pumping for the agriculture, energy, and materials industries.

Box continued on next page

Box 3 continued...

- **AFRICA:** Water infrastructure in Africa is characterized by financing gaps. Businesses in many areas may find that low-cost, land-based interventions are a practical strategy to address water quality and supply problems in the coming years. **South Africa's** Working for Water program is the continent's most well-known initiative – estimated to have saved the country \$50 billion in treatment costs. It also has a long history of partnering with businesses to offset their water use and protect water quality. Reflecting these successes, the program's budget is set to increase in the coming years.
- **OCEANIA:** The **Australian** government has leveraged market-based mechanisms to address serious environmental challenges like dewatering in the Murray-Darling Basin and offsetting impacts to biodiversity from development. But with a new government coming in, there appears to be less appetite for public funding of incentives. At a regional level, interest may be shifting from engaging large point-source polluters in water quality trading to a focus on incentives for small private landowners.
- **EUROPEAN UNION:** On the policy front, the European Commission is developing a green infrastructure strategy, including a new financing facility set to go live in 2014. The Water Framework Directive (WFD), a policy directive introduced in 2000, also sets goals for more stringent water quality requirements across the continent, but progress has been slow, and the EU is unlikely to maintain its current timeline. However, a recent blueprint for implementing the WFD does indicate support for *“natural water infrastructure”* approaches. Most interest in market mechanisms is seen in **Northern Europe**, especially the **United Kingdom**, where \$96 million is earmarked for catchment management by private water companies and the government has been a big backer of environmental incentives.

Other high-risk sectors are conspicuously absent. For example, our tracking indicates that very few mining companies engage in IWS approaches, with the notable exception of South Africa, where a handful of mining companies have partnered in the past with the national “Working for Water” program. This is a serious gap, especially given that the sector reports higher detrimental impacts related to water risk in the last five years than any other.¹⁰

Similarly, energy and apparel companies, despite being among those most exposed to water risk, remain off our radar in terms of investment activity. Our tracking suggests that for the apparel and textiles industry, difficulties understanding supply-chain impacts and dependencies have slowed progress in managing at the landscape level. Meanwhile oil, gas, and fuels firms risk losing regulatory license – not to mention the physical ability – to operate in water-scarce areas. In some regions like India, investors have already slowed lending to coal projects over concerns that water shortages would lead to shutdowns,¹¹ while in North America drought has led to

operational delays and increased compliance costs for hydraulic fracturing companies.¹²

Geographically, investments don't always overlap with water risk. In areas like Mexico, the southern Andes, North Africa, and Central and East Asia, we find blank spaces on the IWS map – reinforcing the fact that physical or reputational risks alone may be insufficient to drive projects in the absence of the right partners and enabling conditions (Map 2).

IV. Motivations: Physical, Regulatory, Reputational Risks Drive Private Watershed Investments

Reported private sector watershed investments were associated with a variety of investor motives for supporting watershed-scale protection, most of which will be familiar to business decision-makers (see Table 2; Figure 4).

¹⁰ CDP, 2013.

¹¹ Pearson, 2013.

¹² CDP, 2013.

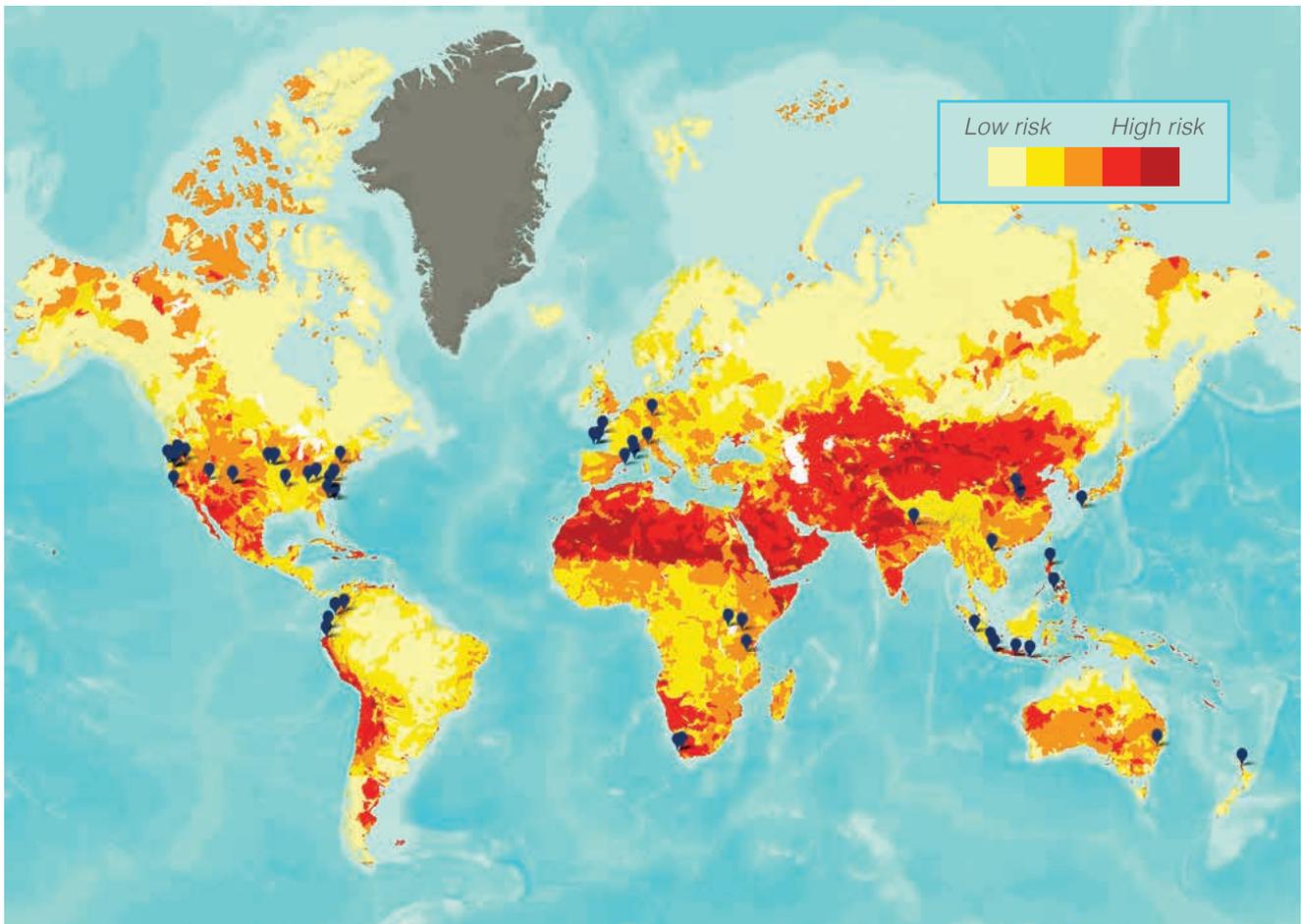
For companies tracked in this report, risks to physical infrastructure, financial stability, and operations are significant drivers of watershed investments. Businesses reportedly face increased water pollution and threats to reliable access to water supplies – while the costs to address these problems are growing. Supply-chain risk remains uncharted territory when it comes to watershed investments. In our own tracking, watershed investments have historically supported activities either at the stage of raw material production or in direct operations.

Physical challenges are multiplied in watersheds where many users compete for shrinking clean water supplies, which also negatively impacts businesses' social license to operate, i.e., broad, ongoing approval for the company's operations among the community and other stakeholders.

Social license to operate and brand considerations may also necessitate voluntary, landscape-level water management. This is especially true in areas where poverty and local livelihoods are a concern, or where businesses face conflicts with other water users.

From a regulatory angle, we find steadily increasing demands from the public sector for businesses to better manage water resources, mitigate impacts on available supplies, and limit pollution. Where governance structures to allocate usage rights or enforce regulations are weak, however, water risk is exacerbated. Watershed investments may offer opportunities for companies to not only meet compliance but also capture positive reputational impacts, reduce compliance costs, and influence future regulations.

Map 2: Active Business Watershed Investments and Global Water Risk
(Each pin represents an active project.)



Sources: Project data from Forest Trends, 2013.
Map data from Gassert, et al., 2013.

Table 2: Business Investments in Natural Water Infrastructure in 2011, by Sector

Role	Sector	Current Examples	Driver	Typical Partners
Demand	Beverage	Coca-Cola (global), Heineken (global), PepsiCo (global), SABMiller (global), Tesalia Spring Company (Ecuador), Evian (France), Nestlé Waters [formerly Vittel] (France), Bionade (Germany), Pristine Water Company (Indonesia), La Tondena Distillers Inc. Kanla-on Spring Water Plant (Philippines), Uganda Breweries Limited (Uganda), Deschutes Brewery (USA), Big Sky Brewing Company (USA)		Directly with communities/ implementing NGOs; contributions to water funds; purchasing of offset certificates
	Real Estate Development	Developers requiring groundwater mitigation offset credits (USA)		Through a mitigation bank (which may be private, not-for-profit, or publicly operated)
	Tourism & Recreation	Hoteliers (Kenya), ski resorts (USA), tourism operators (Vietnam)		Directly with communities/ implementing NGOs; contributions to water funds
	Retailers	Woolworths (South Africa)		Contributions to public watershed investment programs to offset water use
Both Demand & Supply	Manufacturing & Industry	Dow Chemicals (global), Henan Provincial Century Xinfeng Cement Co. Ltd. (China), Gushipengxin Zinc Products Co. Ltd. (China), Zhongyanwuyang Salt Company Ltd. (China), Pavco (Colombia), sugar mills in the Valle del Cauca (Colombia), industry in the Loire and Allier river basins (France), Sony Semiconductor Kyushu Corporation (Japan), Isuzu (Philippines), Nestlé North America (USA), Sonae Novobord (South Africa), Alpine Cheese Company (USA), Silk Soymilk (USA), industrial dischargers with NPDES (National Pollutant Discharge Elimination System) permits (USA)		Directly with communities/ implementing organizations; on-site or business-owned lands
	Energy	Power stations in the Hunter River basin (Australia), Singkarak Lake hydroelectric operator (Indonesia), Way Besai hydroelectric operator (Indonesia), Bonneville Power Association (USA), Pacific Gas & Electric (USA), Portland General Electric (USA), power generators with NPDES (National Pollutant Discharge Elimination System) permits (USA), hydropower operators (Vietnam)		Directly with communities; contribute revenues to public sector via fees or taxes (which may come from consumers); contributions to water funds; hydropower often a public-private entity
	Private Water Utility	South West Water (UK), United Utilities (UK), PT KTI (Indonesia), Avion Water Company (USA), Illinois-American Water Company (USA)		Directly with communities/ implementing NGOs; as an intermediary channeling funding between ratepayers and implementing orgs
	Agribusiness & Fisheries (excluding individual farmers)	Sugar cane growers' associations (Colombia), horticulturalists (Kenya), dairy operations (New Zealand), Nordic Shell Holdings (Sweden), Southern Minnesota Beet Sugar Cooperative (USA)		Communities, NGOs, public IWS programs, contributions to water funds; buying or selling credits/use rights through banks and exchanges
	Metals & Mining	Mining enterprises in the Hunter River basin (Australia), City Henan Forest Farm Laoyacha Gold Mine (China), Medupi (South Africa), Shanxi Province mining enterprises (China), Blue Ridge Mine (South Africa)		Public sector agencies and IWS programs, communities, other firms
	Urban Property Owners (stormwater controls)	Property owners in Philadelphia and Washington DC (USA)		Public agencies, engineering/ consulting firms

Role	Sector	Current examples	Driver	Typical partners
Supply	Mitigation Banks	Private nutrient credit banks in Chesapeake Bay basin (USA)		Nutrient credit buyers, regulators
	Agribusiness & Fisheries	Manure treatment facilities (Bion – USA), mussel farms (Nordic Shell Holdings – Sweden)		Nutrient credit buyers, municipalities, regulators
	Engineering	CH2MHill (USA), Cardno Entrix		Project developers, government, finance
Intermediary	Legal	Hunton & Williams LLP (USA)		Buyers, sellers, investors, other intermediaries
	Environmental Restoration Enterprises	Enterprises offering technical assistance for restoration (global)		Project developers, government, finance
	Financial services/brokerage	Mission Markets, Markit, Evolution Markets (USA)		Buyers, sellers, investors, other intermediaries

KEY:  Cost abatement  Risk management  Brand/reputation  Compliance  Revenue

V. Investment Models and New Opportunities

Models for business investment are partnership-oriented, rapidly maturing

Business investment in watersheds reflects a diversity of project roles, project types, and investment mechanisms. There is no “one size-fits-all” approach, nor are there widely accepted project standards or guidance.¹³ This is no surprise, considering the range of business needs and local watershed, political, regulatory, and economic conditions.

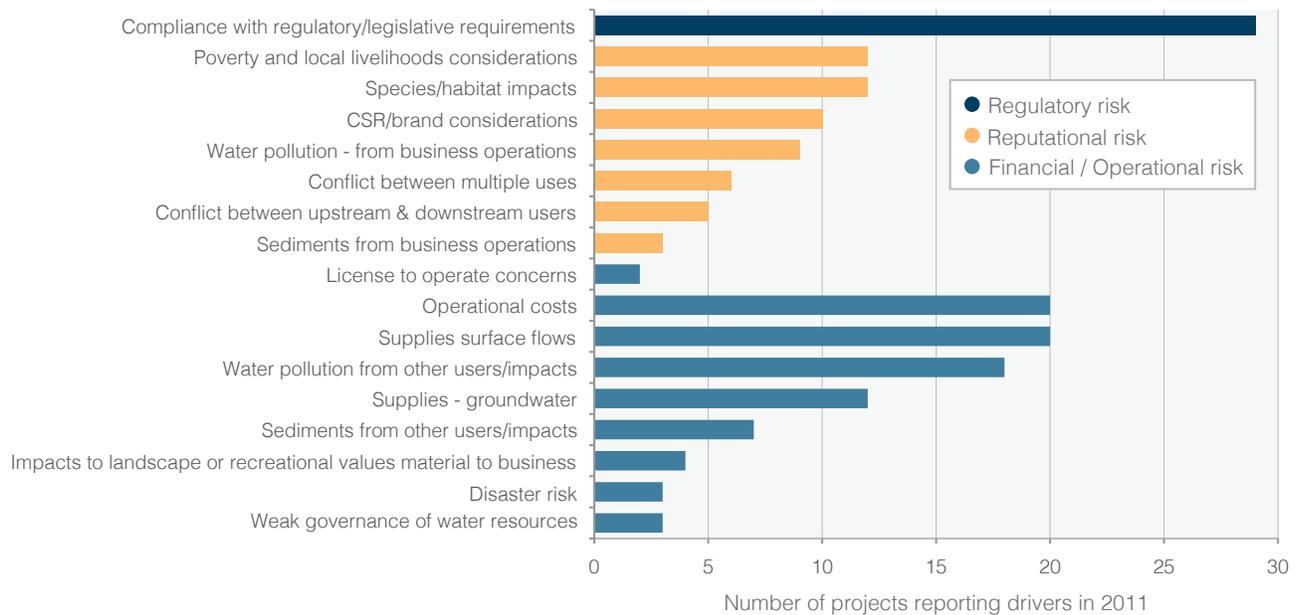
Fewer than 10% of investments reported are direct agreements between a company and a land manager. Instead businesses prefer to be team players: a much larger portion of watershed investments are public-private and civil-private partnerships, where a local government agency or non-profit provides co-financing or assists in planning, conservation actions, stakeholder engagement, or administration of funds (Table 3).

While business is usually on the paying end of transactions, some companies are finding new sources of revenue and playing new roles as watershed investment service providers. We find evidence of new business opportunities including:

- The United States is experiencing a boom in green infrastructure, driven mostly by new water quality regulations. Engineering firms, restoration consultants, real estate developers, and equity capital are all getting in on the game, especially in the Chesapeake Bay where public-private partnerships (or “P3s”) are being developed for urban green infrastructure projects. An estimated \$28 billion will be spent on stormwater controls in the Chesapeake over the next decade.
- In the agribusiness and fisheries sector, producers market water pollution reduction “services” by managing fertilizer use, restoring natural systems on private lands, and even by farming mussels, which can filter out pollutants in water bodies. A mussel farm in Sweden contracts with a local municipality for waste water treatment services; in Pennsylvania (USA) a manure treatment facility treats its waste stream to generate nutrient credits for the regional water quality trading market.
- Commercial *nutrient mitigation banks* have sprung up in the US to meet growing demand for *water quality credits* which are nutrient pollution reductions created through environmental restoration that have been packaged as a tradable offset. Other companies are beginning to seek opportunities to facilitate watershed investments, acting as consultants, brokers, and project developers.

¹³ Currently no widely used standards or formal guidance for water stewardship exist, although there is movement on this front, with the CEO Water Mandate’s preliminary “maturity progression” for business water management (CEO Water Mandate, 2012) and the Alliance for Water Stewardship’s International Water Stewardship Standard, currently in the pilot phase.

Figure 4: Reported Drivers of Business Investments in Natural Water Infrastructure in 2011



Source: Forest Trends, 2013.

Table 3: Watershed Investment Mechanisms for Business (Total Spending 1990-2011)

COMMUNITY PARTNERSHIPS	Business engages directly with the community to invest in watershed protection, often with NGO facilitation.	\$32 million
WATER FUNDS	Businesses and other major water users like municipalities or irrigation groups pay into a conservation trust fund, administered by a third party, to invest strategically in watershed health.	\$6-7 million
WATER QUALITY TRADING	Regulated entities buy and sell water quality credits to meet compliance under a cap-and-trade-like program for water pollution.	\$13-16 million
VOLUNTARY USE OFFSETS	Businesses pay for environmental restoration projects that increase efficiency, recharge groundwater, or restore flows to rivers to offset their own water footprint.	\$17 million
PUBLIC-PRIVATE CO-FINANCING	Businesses contribute funds to an existing public natural infrastructure investment program or project that benefits them.	\$8.2 million
"GREEN INFRASTRUCTURE" TAXES AND FEES	Taxes or fees (sometimes based on water quality or use impacts) are used for watershed restoration and protection projects.	\$8-10 million
IMPACT MITIGATION	Businesses with significant impacts to watershed health are required to carry out compensatory mitigation, typically either on-site or via payments into a dedicated fund.	\$11.2 million*

*This figure does not include wetland and stream compensatory mitigation, which is tracked separately by Ecosystem Marketplace and estimated to deliver \$2.4-4 billion annually in conservation finance worldwide (Madsen, et al., 2011).

BOX 4: CASE STUDY: SONY SEMICONDUCTOR KYUSHU

Groundwater levels around Kumamoto City, Japan, have dropped in recent years as a result of increased amounts of paved-over land inhibiting groundwater recharge and agricultural policies that discourage rice production. When community concerns arose about the impacts on groundwater from a proposed Sony semiconductor manufacturing facility, a local nonprofit organization proposed an innovative solution.

Sony Semiconductor Kyushu agreed to offset its groundwater withdrawals by paying agricultural producers in the area to flood fields no longer under rice production in order to increase infiltration of water to the aquifer. Farmers are compensated for their management costs at an initial rate of 11,000 yen (roughly \$110) per hectare. Sony also buys sustainably grown rice from partner producers to sell in its cafeteria. As of 2009, the volume of offsets Sony obtained was significantly higher than its actual water use, and studies suggest that groundwater levels are rising. The program's success has led to participation by other local businesses and Kumamoto City launching a public water conservation program.

Source: Nishimiya, 2010.

These activities represent opportunities for business, but they are also good for the environment and for local communities. Watershed projects where the private sector is an investor in natural water infrastructure report more rigorous monitoring activities and higher overall monitoring rates than those supported solely by the public or non-profit sectors. In addition to greater accountability, we find that projects involving a business funder are also more likely than the average project to report local socio-economic benefits as a project objective – an encouraging finding for IWS efforts in developing countries.

VI. The Road Ahead: Outlook

One way or another, business in the future will be required to account for the value of healthy natural landscapes to their operations. Whether that accounting comes in the form of costs or opportunities depends on action today. This report introduces some key concepts and players to readers who are considering stepping up as early movers in the business community. The following observations and conclusions point to ways in which private, public, and NGO actors can begin – both independently and collaboratively – to support a transition to *natural capital*-conscious communities, averting significant economic and ecological costs.

Outlook: Growing risks for business

Today, private investments make up only a small fraction of the \$8.2 billion spent every year on nature-based solutions to water challenges – and an even smaller proportion of the estimated future cost of inaction. But businesses tracked in this report tend to be driven by reasons closer to home – and not by trying to solve the global water crisis – including their desire for good corporate citizenship, to fill a void in public governance, or motivate the public sector to take action, and, perhaps most of all, to apply natural infrastructure solutions to natural risks.

In 2014 and beyond, we expect these drivers to become all the more pressing. Some key sources of business risk include the following:

- In China, businesses risk being caught unprepared for stricter regulation, new eco-compensation fees, and an upcoming national ordinance and zoning framework based on eco-compensation principles.
- In the US, new stormwater rules, tighter water quality standards, and even air emissions controls will all cost business significantly in the absence of cost-effective and market-based solutions like water quality trading and green infrastructure incentives.
- New environmental impact laws and compensation requirements in Andean countries, especially Colombia, Peru, and Ecuador, will materially impact

BOX 5: CASE STUDY: SABMILLER

SABMiller, one of the largest global brewers and beverage companies (group revenues in 2012 exceeded \$31 billion) employs a “beyond-the-breweries” approach to managing water quality and supply and reducing water conflicts.

In Bogotá, Colombia, SABMiller subsidiary Bavaria faced increasing water quality problems from deforestation and land clearing in mountainous areas upstream. Since 2009, Bavaria has supported a water fund led by The Nature Conservancy which pays agricultural producers to move cattle off of steep slopes (to limit erosion), switch to more ecologically friendly farming practices, and replant degraded areas. The company has paid \$240,000 into the fund so far and estimates that watershed protection efforts are cutting water treatment costs in the supply area by \$458,000 each year.

In South Africa, climate change and water-guzzling invasive plants posed major risks to the supply chain. With a projected decline in surface water supplies of 41% by 2032, shifting to groundwater pumping to meet water needs would cost the company at least \$700,000 a year. SABMiller found that for the same amount of money, it could invest in clearing invasive plant species through partnerships with public works program “Working for Water” and biodiversity stewardship agreements. These actions also created an additional 50 jobs per year in the catchment and boosted South African Breweries’ reputation locally.

Source: Kissinger, 2013.

many businesses operating in the region, especially in the extractive and natural resource-based sectors.

- Reputational and operational risks are significant for sectors like energy, mining, and apparel, which have large water impacts and dependencies but are moving slowly to manage risk at the watershed level.

Outlook: Investors’ learning curve is steep

Businesses interested in watershed investments should be prepared for an uneven playing field for first comers. Water stewardship approaches take time and effort to develop. They may be more cost-effective once operational than on-site water management, but initial hurdles are high. Watershed investment projects require engaging numerous stakeholders, scoping and assessing different interventions, and establishing the terms and mechanism for transactions. Partnerships with government or civil society groups can be invaluable in laying this groundwork.

With the exception of a few high-level strategic initiatives taking place at major corporations like Coca-Cola, Nestlé, or Dow Chemicals, we find that companies risk reinventing the wheel with every new project. Little information or guidance is available for developing investment projects, and the one-off nature of many

efforts means that opportunities to capture efficiencies (in terms of watershed benefits per dollar invested) are probably being missed. Here, Ecosystem Marketplace – alongside project developers and watershed investors – is continuing to explore opportunities to better illuminate and inform early investment activities.

Outlook: Waiting for public-sector signals

We find that companies can manage their position in the social and environmental landscape by taking an active role in conversations with other water users and policy-makers about water resources and governance – responsibilities that no longer rest solely on government shoulders.

Increased industry leadership paired with a supportive policy environment will scale investments upward much more dramatically than is currently projected. IWS-friendly policy support could consist of a mix of tax incentives for natural water infrastructure investments, offset/compensation requirements for watershed impacts, and policy guidance for “watershed approaches” complementing large infrastructure projects. With these measures in place, business awareness of watershed investment opportunities will increase significantly – so will learning, leading to greater project efficiencies and improved outcomes.

How does this translate into impacts? One simple metric is hectares of land restored and protected per year. Our data demonstrates that an effective “public push” could conservatively result in the protection or management of over half a million new hectares per year by 2025 – more than twice the current rate.

VII. Conclusion: Unlocking Business Opportunities in Natural Water Infrastructure

Current investors and land managers expect the market space for private sector watershed investments to expand in the coming years. At current rates of growth (about 3% annually), investments are projected to grow by 50% by 2025 – a conservative estimate in light of recent business attention to water issues and *natural capital* approaches. Creating a watershed investment-friendly policy climate for businesses would deliver even stronger growth.

Our analysis suggests that business investments in watershed protection will benefit from the following:

- Public-private and civil-private collaboration to develop projects, frameworks, and investment-friendly governance. Watershed investments offer a new avenue for partnerships that align business, community, and government interests and resources in solving water challenges. Water scarcity and quality issues are extremely difficult for just one actor to solve. The growing popularity of watershed investment partnerships are a promising path to more effective collective action around water problems.
- Increased awareness of “beyond-the-fence” approaches, particularly among private sector actors positioned in high-risk sectors.
- Development of useful and robust standards, guidance, and metrics for project development, assessment, and for integrating “beyond-the-fence” approaches into broader business environmental management.

- Better sharing of information and lessons within the private sector on project development, approaches, and impacts.
- Improved project efficiencies and economies of scale to maximize return on investments.
- Uptake of *natural capital accounting* and environmental disclosure frameworks that enable businesses to assess, manage, and report on their ecological dependencies and related water risks.
- Linkages to other environmental markets (such as carbon) and sources of financing to support project development.
- Clear and flexible public policies to create a large and level playing field for all businesses, including policy guidance, natural infrastructure incentives, and enabling regulatory frameworks.

For public-sector water managers and non-profit organizations, giving all major water users in a basin a “seat at the table” means strengthened governance, new ideas, and a new source of finance for watershed protection.

From a business perspective, managing watershed and supply-chain risks at their source will be critical in navigating a water-insecure future. To focus only on efficiency or management at the level of direct operations means missing key risks and opportunities. Investors are beginning to understand this and are rewarding companies with a water stewardship perspective.¹⁴

This brief captures the first volley in a new way of thinking about water resources. A few business leaders have already found that IWS approaches can lower costs, improve local relationships, and create new opportunities – turning risk into a competitive edge. Many more have taken initial steps toward understanding the nature and level of water risk. But it will require a collective effort on all fronts – policy, business, and NGO – to translate this awareness into action.

¹⁴ CDP, 2013.

WANT TO LEARN MORE?

- We're beginning work on the 2014 report. Get in touch with us to learn how you can be involved, at info@ecosystemmarketplace.com.
- Read our full report on watershed investments: *Charting New Waters: State of Watershed Payments 2012* at http://forest-trends.org/publication_details.php?publicationID=3308
- Visit our project inventory at the Watershed Connect information portal, at <http://www.watershedconnect.org>
- Sign up for our monthly news briefs on watershed investments and green infrastructure, at http://watershedconnect.com/connect/?trigger=news_briefs

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The Swiss Agency for Development and Cooperation (SDC) is Switzerland's international cooperation agency within the Federal Department of Foreign Affairs (FDFA). In operating with other federal offices concerned, SDC is responsible for the overall coordination of development activities and cooperation with Eastern Europe, as well as for the humanitarian aid delivered by the Swiss Confederation.

The goal of development cooperation is that of reducing poverty. It is meant to foster economic self-reliance and state autonomy, to contribute to the improvement of production conditions, to help in finding solutions to environmental problems, and to provide better access to education and basic healthcare services.



The Program on Forests (PROFOR) (www.profor.info) is a multi-donor partnership managed by a core team at the World Bank. PROFOR finances forest-related analysis and processes that support the following goals: improving people's livelihoods through better management of forests and trees; enhancing forest governance and law enforcement; financing sustainable forest management; and coordinating forest policy across sectors. In 2013, PROFOR's donors included the European Commission, Finland, Germany, Italy, Japan, the Netherlands, Switzerland, the United Kingdom and the World Bank.



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