

Analyzing Environmental Trends: Taking the Pulse of Asia's Financial Community

DANA KRECHOWICZ AND SHALLY VENUGOPAL

World Resources Institute Working Papers contain preliminary research, analysis, findings, and recommendations. They are circulated to stimulate timely discussion and critical feedback and to influence ongoing debate on emerging issues. Most working papers are eventually published in another form and their content may be revised.

The Government of Japan, through the International Finance Corporation (IFC), generously provided funding for this paper. The views expressed in this paper are solely those of WRI.

Suggested Citation: Dana Krechowicz, Shally Venugopal, "Analyzing Environmental Trends: Taking the Pulse of Asia's Financial Community," WRI Working Paper. June 2010, World Resources Institute, Washington, DC.

June 2010

I. EXECUTIVE SUMMARY

In 2008, a unique research collaboration between The World Resources Institute (WRI) — a leading environmental think tank — and HSBC — a major global financial institution — was formed to better understand the financial materiality of environmental trends affecting selected sectors in Asia. This research collaboration produced in-depth, peer-reviewed research on the impacts of climate change and water scarcity in South and Southeast Asia's power, food and beverage, and real estate sectors.

This working paper draws on insights gained from the research as well as feedback from the region's financial community, to frame the key challenges that analyze the financial impacts of emerging environmental trends in the region.

These challenges can be summarized as:

- A **lack of publicly available data** relating to both environmental trends (for example, localized water scarcity data) and company-specific exposure to potential environmental risks (for example, the number of corporate facilities in water scarce areas);
- **Limited contextual** analysis for framing the complex connections between environmental trends and their financial impacts;
- The highly **unpredictable** nature of environmental trends which limits the ability to forecast their likelihood and their magnitude.

While these challenges are not specific to South and Southeast Asia, this report provides examples of analysis that incorporates environmental trends in the region and suggests practical steps to enhance and expand how Asian (and other emerging) financial markets are responding to emerging environmental issues.

II. CONTEXT: Summary of WRI/HSBC Research and Findings

There is growing consensus that climate change and water scarcity will pose serious threats to countries in South and Southeast Asia over the next several decades. These threats, which range from more extreme weather events (like typhoons, floods, and droughts) to more limited water availability, are likely to have significant impacts on the region's economies and industrial sectors. A better understanding of how and when environmental risks may impact company performance will help the region's financial community accurately assess corporate value.

While research and analysis on the financial implications of climate change and water scarcity is increasingly available in the US and Europe, information remains more limited in South and Southeast Asia. To help address this gap, the World Resources Institute (WRI) and HSBC embarked on a comprehensive research project to identify how environmental trends could financially impact the power, food and beverage (F&B), and real estate sectors in India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. After the publication of three sector reports, WRI and HSBC conducted a research "roadshow" to communicate the report findings and better understand what challenges the local financial communities face in reflecting environmental knowledge in traditional financial analysis.

Section II provides a brief overview of the research process and its findings to set the context for Section III, which details the key challenges involved when assessing the financial relevance of environmental risks in South and Southeast Asia.

A. Research Process

WRI's June 2009 publication, "*Emerging Risks: Impacts of Key Environmental Trends in Emerging Asia*"¹ identified a set of critical environmental and social trends with the potential to disrupt the economies of six key countries in South and Southeast Asia. These trends were deforestation, water scarcity, climate change, food insecurity, energy insecurity, air pollution, urbanization, and population growth.

WRI's concurrent publication, "*Undisclosed Risk: Corporate Environmental and Social Reporting in Emerging Asia*"² looked at the extent to which the largest publicly-listed companies in the six selected countries disclose the potential risks from the environmental and social trends identified in "*Emerging Risks*". While the report noted improvement in disclosure over a five year timeframe, the information remained limited. Corporate disclosure focused on how the company could impact the environment rather than on how the environment could impact the company's operations and financial performance.

The findings of the two reports prompted questions as to whether environmental trends were in fact material to companies and their investors. Was the lack of disclosure an omission by companies, or were environmental trends largely irrelevant to analysts and investors? In order to address these questions, WRI worked with financial analysts at HSBC to analyze three sectors — power, food and beverage, and real estate — and examine the impacts of two particularly pressing environmental trends: climate change and water scarcity.

In all three sector reports WRI provided an analysis of the environmental risks, the initial identification of potential financial impacts and the optimum methods for scenario analysis. HSBC focused on company-specific case studies and sensitivity analysis to determine the financial impacts.

¹ <http://www.wri.org/publication/emerging-risks-asia>

² <http://www.wri.org/publication/undisclosed-risk-asia>

B. Key Research Findings

Power Report Summary:

“Over Heating: Financial Risks from Water Constraints on Power Generation in Asia”

The report focused on how water scarcity — in the form of physical shortages — could affect the region's power sector by disrupting operations and/or delaying project execution. Water is a necessary component for cooling in thermal plants, and also for water generation in hydropower plants. The report showed that 74GW — over half of existing and planned capacity for the region's largest power companies — is, or will be, located in areas considered as “water scarce” or “water stressed” (based on the ratio of total withdrawals to utilizable water). The situation is particularly alarming in India where 79% of new planned capacity will be built in water scarce or stressed areas. HSBC's analysis of the vulnerability of power plants to water shortages, found that delays in project execution could cause a material loss of output: each 5% drop in the plant load factor would result in approximately a 75 basis point drop in a project's internal rate of return.

Food & Beverage (F&B) Report Summary:

“Weeding Risk: Financial Impacts of Climate Change and Water Scarcity Trends on Asia's Food and Beverage Sector”

The F&B industry's dependence on agriculture, aquaculture, and water resources for business operations make it particularly susceptible in a region where climate change is projected to severely intensify water scarcity problems. Given the diverse nature of the region's F&B sector, country-level and subsector level analysis was conducted. The findings identified that edible oils, starches, and sugar sub-sectors will be most vulnerable to increasing agricultural prices, while

aquaculture, poultry, and dairy will be most vulnerable to disease and contamination (for example, due to water pollution and/or the spread of disease associated with higher temperatures). HSBC's analysis demonstrated that climate and water risks could impact financials: a case study of an Indian sugar company demonstrated how a sugarcane price increase of just one percent could lead to a profit decline of as much as 10 percent.

Real Estate Report Summary:

“Surveying Risk, Building Opportunity: Financial Impacts of Energy Insecurity, Water Scarcity, and Climate Change on Asia's Commercial Real Estate Sector”

The interplay of climate change, water scarcity, and energy security concerns were shown to have potentially significant financial impacts on commercial buildings in the region. Utility costs were expected to be the greatest area of financial impact during a building's lifetime, driven by higher electricity/diesel prices and shortages. Other financial impacts — triggered by physical damage from climate change-related weather events and/or permitting difficulties due to water scarcity — included accelerated building depreciation, rising insurance premiums, and project delays. Analysis found that developers and building owners had the opportunity to hedge potential environmental risks by pursuing “green” building retrofits or undertaking new construction. The financial case for “hedging” in this way was particularly strong in India where the marginal cost of “green” construction has been rapidly declining over the past five years. HSBC's analysis found that the payback period for green investments is approximately three years for a commercial building in Mumbai.

The Power, F&B and Real Estate sector reports are available at:

<http://www.wri.org/stories/2010/04/three-new-reports-examine-financial-impacts-environmental-risks-southeast-asia>

Table 1: Summary of Outreach Events

	<u>Indian Association of Investment Professionals</u>	<u>CFA Singapore</u>	<u>The Hong Kong Society of Financial Analysts</u>	<u>CFA Society of Japan</u>
Date	April 8 th , 2010	April 13 th , 2010	April 15 th , 2010	April 20 th , 2010
Type of Event	Dinner	Lunch	Lunch	Evening
Host	WRI/HSBC	CFA	CFA	CFA
# Attendees*	~70	~50	~65	~50-60
Presenters	WRI/HSBC	WRI/HSBC	WRI/HSBC	WRI/Carbon Disclosure Project

*exact number not available

Source: WRI and CFA Institute

C. Research Outreach

WRI and HSBC conducted extensive outreach within Asia to disseminate the findings of the three sector research reports. One-on-one meetings with financial community representatives were supplemented by broader presentations to the local societies of the Chartered Financial Analyst (CFA) Institute in India, Singapore, Hong Kong, and Japan.

The CFA Institute provided a strong, well-respected platform to comment on and critique the research findings. Each of the local CFA Institute events was attended by an average of 60 attendees, representing some of the region's largest financial services companies and institutional investors (see Table 1). These events were a "first" for these societies as they concentrated on the impact of environmental issues, rather than technical financial analysis.

III. CHALLENGES TO ENVIRONMENTAL ANALYSIS: Financial Community Feedback

Meetings with financial market participants across South and Southeast Asia to discuss the three sector reports also provided important insights into how the region's financial community view environmental trends, and whether these trends are seen

as relevant to its work. Anecdotally, and on a personal level, concerns were expressed about worsening environmental conditions. While it is difficult to draw extensive conclusions, the most obvious explanation for these concerns lies in broader public acceptance of environmental threats, perhaps as a result of recent physical impacts in Asia (for example, back-to-back typhoons in the Philippines and heightened monsoon volatility across the region).

Recognition of the seriousness of emerging environmental problems did not, however, translate into widespread acceptance of the need to integrate environmental trends into financial analysis. Following WRI/HSBC's presentation, some analysts and investors either distributed research findings to clients, performed company-level analysis, or requested additional information to see how the WRI/HSBC research could be applied to their research/investments. But most participants expressed that consideration of environmental issues would be challenging. Challenges cited fell under three categories: A) organizational; B) perceptual, and C) technical. In most cases, the Asian financial community appears to face organizational and perceptual challenges before technical challenges even come into play.

A. Organizational and Perceptual Challenges

Organizational challenges are classified as inherent to individual organizations; that is, they are driven by the structure of a particular financial or investment organization, rather than an analyst or investor's behavior. Feedback on the types of organizational challenges that exist included:

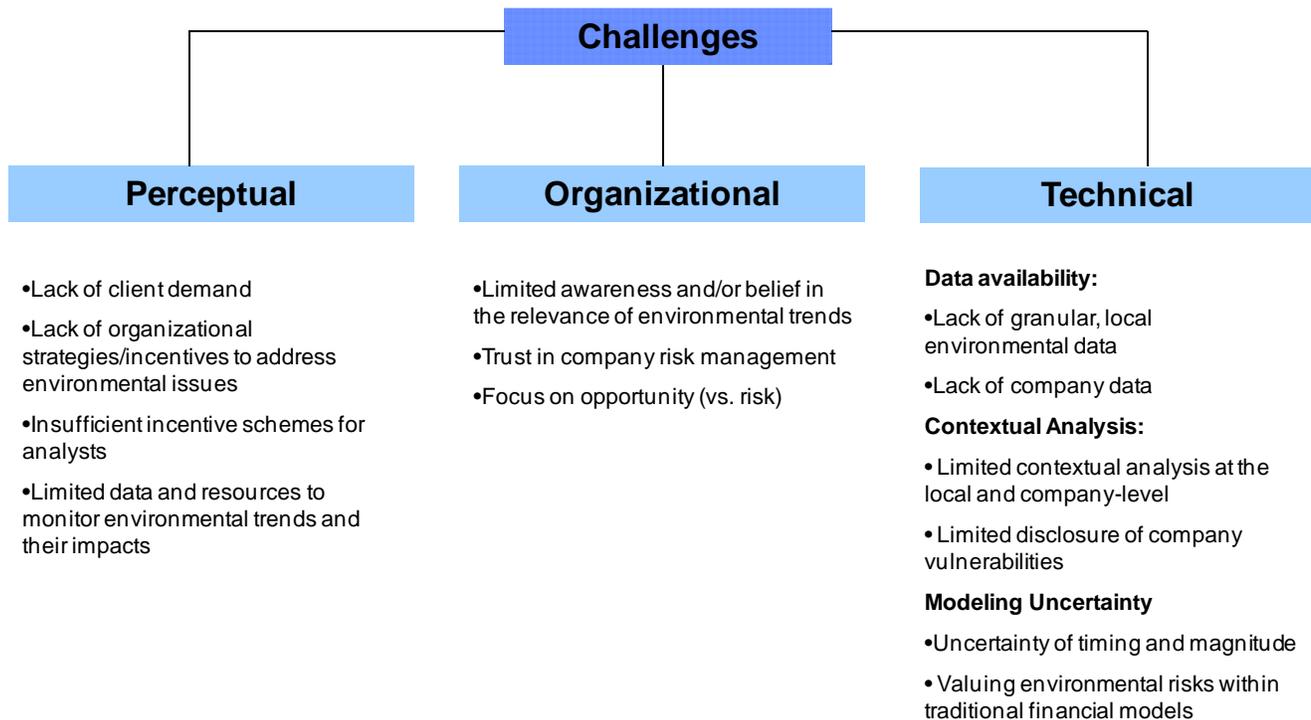
- *Lack of organizational strategies/incentives* to address environmental issues. This feedback was particularly prevalent among local and regional financial services companies (with a few notable exceptions). Local offices with multi-national/global parent companies appeared to be more attuned to environmental issues, but still demonstrated a relatively low rate of application to their core business.
- *Limited data and resources* available to financial analysts and investors to monitor environmental trends and their impacts on companies. Several analysts highlighted the lack of environmental data or analysis available through traditional data and information channels. The limited data and resources may also be driven by lack of demand from the financial community.
- *Lack of client demand* for environmental analysis. There was acknowledgment that this is a vicious circle: clients

are unlikely to demand information if they are not alerted to its relevance by analysts. Unlike some other regions (e.g. Europe) there appears to be less “push” from Asian institutional investors for environmental analysis since they typically do not have mandates that require it.

The most prevalent perceptual challenges — or those classified as being in the control of analysts or investors — included:

- *Limited awareness and/or belief* in the relevance of environmental trends to financial analysis, particularly in the context of short time horizons. Feedback from India in particular, where energy and water prices are highly subsidized and regulation is often limited by the motivation for economic growth, included doubt over the likelihood of resources becoming sufficiently scarce to affect costs or capital expenditure requirements in the short term.
- *Trust in company management* (i.e. the management of companies being analyzed) was frequently referred to as a key reason for ignoring environmental risks: companies were believed to be managing environmental issues or were able to successfully hedge against them.

Figure 1: Financial Community Feedback - Key Challenges to Analyzing Environmental Trends



Source: WRI

B. Technical Challenges

Based on the assumption that organizational or perceptual barriers are not insurmountable, what technical challenges still remain when analyzing environmental trends in Asia? Or, from a different perspective, what technical or analytical challenges perpetuate the perceptual and organizational challenges that exist?

Environmental trends can be broadly classified as having “direct” impacts and/or “indirect” impacts on company performance:

- *Direct Impacts*: how environmental trends might directly impact business operations. For example, how animal health in the dairy and poultry industry might be impacted by poor water quality and availability.
- *Indirect Impacts*: how emerging environmental trends will affect company supply or value chains. For example, how climate change might affect the yield, and subsequently the price of feedstock in the seafood industry. Or, how higher energy prices can increase the cost of key raw materials for building construction, thus impacting project returns.

Feedback from the financial community in Asia and the findings of this research project pointed to three key *technical* challenges that exist when evaluating direct and indirect environmental impacts on company performance.

1. Environmental Data Availability

Availability and access to reliable environmental data pose particularly acute challenges in Asia, compared to other parts of the world. When analyzing water trends, limited reliable data exists at a sufficiently granular level to fully assess how water scarcity risks may play out at the local level.

Furthermore, to adequately assess a company's exposure to water risks, several different metrics may be required. In the sector report on Power, “*Over Heating*”, WRI identified four key data metrics to evaluate water stress in the power sector:

- Water withdrawals as a percent of total renewable supply; current, and projected
- Projected changes to river volumes/levels from climate change
- Percent of reservoir water committed to other uses

- Relative security of water allocations

Of these metrics, the only, and best, data that were available at a sufficiently granular level (and used as the basis of the research) were water withdrawals as a percent of total renewable supply. There were limitations to this dataset since it was several years old, did not include future projects, and was insufficiently “local” to evaluate water scarcity impacts at the plant level. Furthermore, these data only considered current water stress and did not account for future changes due to demographic and climate change pressures.

Data availability on climate change impacts (both current and predicted) in this region is similarly scarce. An additional challenge is obtaining data which predicts the future possible impacts of climate change, including the timing, frequency and magnitude of extreme weather events and temperature changes. Data relating to areas that are most vulnerable — for example, which regions are most prone to floods, droughts or water shortages — are useful, but are rarely granular enough to evaluate the physical impact on sourced raw materials in a localized context, or on a company's specific area of operation. More generally, when environmental data exists, analysts expressed concern about the robustness and reliability, particularly as national and local government-compiled data were often regarded as being out of date or only available in an unusable format.

2. Contextual Analysis

Access to environmental data is obviously critical to connecting environmental trends to financial impacts. But data access alone is not sufficient if it is not accompanied by contextual analysis. This contextual analysis includes understanding the extent to which a company or its facilities are: (1) exposed and (2) vulnerable to environmental impacts. A company's geographical location (or that of its plants/facilities) determines its *exposure* to physical environmental trends, while the nature of a company's operations determines its *vulnerability* to these trends. Understanding these two factors also requires aggregating exposure and vulnerability from the project/facility level to the parent company; in the case of complex conglomerates, this can be quite challenging.

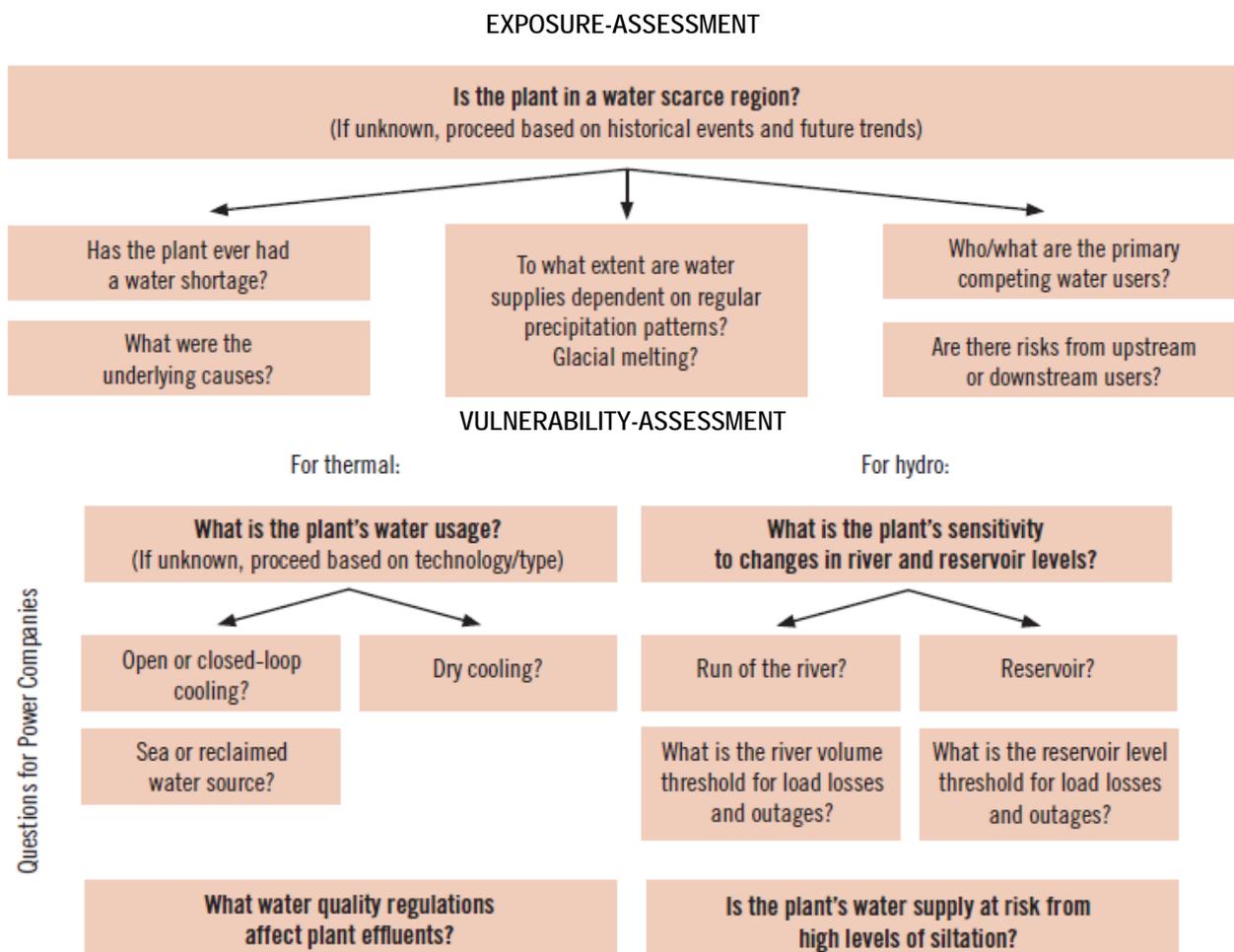
To evaluate *exposure* to environmental trends, the WRI/HSBC research project used geographical information system (GIS) maps. The maps plotted the location of company operations (including facilities and plants) on areas of environmental exposure. For example, the Power sector report mapped the locations of the plants of the largest public power companies' against available water scarcity data in the region. The Real Estate report overlaid the region's major megacities and the real estate projects of the region's largest real estate developers on top of areas of potential climate change event exposure (i.e. floods, droughts, storms, and other hazards). And the F&B report mapped the location of India's major sugar producing states against available water scarcity data.

These maps received very positive feedback from the audience, especially as they highlighted nuanced exposure at a project/facility level, rather than generalizing exposure at state

or national levels. Context at the local level is critical to getting an accurate picture of risk exposure. While these maps were able to provide context for physical risk exposure, additional context — including social, economic, and political drivers — is necessary to understand the full extent of environmental exposure. For example, in the case of water scarcity, it is important to understand factors like how water supplies are secured, which users may receive priority in times of shortage, and how political factors might impact legal rights to water.

Obtaining context related to environmental and company data will require extensive engagement with companies and other researchers. Figure 2 highlights examples of questions the financial community could ask to fully understand the context of water data and company-level vulnerabilities.

Figure 2: Examples of Contextual Questions to Assess Water Risks in the Power Sector



Source: WRI

Understanding company-specific vulnerability is just as important as understanding physical exposure to environmental trends. For example, a company may be highly exposed to water scarcity, but if its operations are not water intensive then financial risks may be minimal. Generally, companies with energy or water resource-intensive operations, or those directly dependent on water levels and quality, are most vulnerable to climate change and/or water scarcity. This context is not always available to the financial community since companies do not typically disclose this type of information. Some of the barriers to enhanced disclosure in this region include:

- Difficulty identifying environmental risks. For example, companies may find it challenging to trace potential environmental risks through complex supply chains;
- Complex conglomerate structures may obscure the identification of environmental issues in individual business areas;
- An unwillingness by companies to provide information which they deem to be commercially-sensitive;
- Concern that environmental data could be interpreted negatively and damage company valuations if it became public.

Recent initiatives in the region like the Water Disclosure Project, Carbon Disclosure Project³ and Emerging Markets Disclosure Project⁴ — which promote voluntary disclosure by companies of their carbon and water footprints and related risks — will hopefully help close this company disclosure gap in coming years. Even so, other exposure-related data and contextual gaps will still need to be filled, along with sector-specific vulnerability analysis.

3. *Modeling Uncertainty*

Arguably the most daunting challenge to assessing the financial impacts of environmental trends is the inherent uncertainty in forecasting both the magnitude and the likelihood of environmental risks occurring and the degree to which they will impact companies. This forecasting ability is further complicated by the difficulty in isolating the impacts of environmental trends on company performance. While this challenge is undeniably universal, it was regularly cited by Asia's financial community.

Uncertainty is particularly problematic when analyzing climate change as it is a global trend with very complex, and often unpredictable local impacts. Within South and Southeast Asia, even the most comprehensive studies only provide predictive data regarding climate change impacts at a country level and over a timeframe of several decades. Water shortages are also difficult to forecast for a range of reasons, not least because water availability is likely to be impacted by climate change. Beyond the direct, physical impacts of these trends, other indirect impacts — including changing government policies and shifting consumer behaviors — are also extremely difficult to predict, but can be equally financially impactful.

The absence of any clear guidance about how to forecast or model such uncertainties, presents serious barriers to incorporating environmental risk into traditional financial analysis. This analysis is further complicated by the long-term nature of environmental risks. For example, when looking at the predicted impact of climate change on crop yields in Asia, the most severe declines in yield are not expected until 2050 and beyond. These long-term cashflow impacts have limited short-term significance when discounted in traditional valuation techniques. The financial community may in fact be acting rationally by ignoring the relevance of environmental trends if their clients, organizations and markets are more focused on short-term results.

The WRI/HSBC research project tackled the challenge of uncertainty by initially engaging with environmental experts and companies in the region to establish qualitative connections between environmental risks and financial value. The potential for financial materiality was then demonstrated through scenario and sensitivity analysis. The primary aim of the research was to establish the connections qualitatively, and then prove the potential for materiality. The ultimate goal was to help the financial community identify general investment themes around climate change and water scarcity, so that the community could focus on assessing company preparedness for these trends, rather than the likelihood of the trends happening at all. The base assumption of the research was that, given the high vulnerability of the region to environmental trends, some material impacts would be evident over a five to ten year horizon.

³ <http://www.cdproject.net>

⁴ <http://socialinvest.org/projects/iwg/documents/EMDPFactsheet.pdf>

By studying past and predicted environmental trends affecting the region, the research was able to construct realistic scenarios — for example, the likely

Quote from CFA event

"[Environmental risks are] difficult to value, so are considered but not reflected into the analysis."

water shortages, or energy price increases —that a company or specific sector could face. While WRI identified, qualitatively, the financial line items (costs, revenues, capital expenditures, etc.) that could be impacted by environmental trends, HSBC applied the scenarios to specific companies and sectors to determine the range of potential financial impacts using sensitivity analysis. There are, of course, limitations to this approach as it relies on hypothetical impacts. However, as with most forecasting techniques, it does serve to demonstrate how a company could be affected by different environmental scenarios. It also enables analysts to identify areas of potential vulnerability, which can inform relative valuations within sectors.

IV. IMPROVING UNDERSTANDING OF ENVIRONMENTAL TRENDS

While feedback from Asia's financial community identified a series of challenges to analyzing environmental trends, what specific steps are required to tackle them?

The examples below provide some recommendations for financial analysts and investors and draw on specific experiences gained in researching the WRI/HSBC Power Report: *“Over Heating: Financial Risks from Water Constraints on Power Generation in Asia”*.

A. Addressing Concerns over Data Availability and Contextual Analysis

1. Engage with companies to publicly disclose relevant environmental data and provide context for interpretation

The environmental information disclosed by companies in South and Southeast Asia rarely reveals the risks companies

are truly facing. In order to accurately assess a company's exposure to environmental risks, analysts and investors require better disclosure. This lack of disclosure has already been recognized by many investors as an area of concern: initiatives such as the Emerging Markets Disclosure Project and the Carbon Disclosure Project encourage environmental disclosure through direct engagement with companies.

Financial analysis requires data (including resource use and dependencies) at the facility (or local) level as well as the company-wide level. Examples of the specific details required from power companies to assess water risk might include:

- Financial information required to assess sensitivity of internal rate of return (IRR) to water shortages;
- Plant data, including exposure to water risks (i.e. location, water source, water usage, and cooling technology);
- Rules governing water contracts;
- Terms of power purchase agreements (PPA's) regarding disruptions.

2. Seek out environmental data sources and context from data providers, academics, and governments

The financial community has a role to play in encouraging governments to provide better environmental data at a national level, while working with private data providers to access environmental data at a local level. Examples of specific data that the financial community should seek from governments may include:

- Resource (e.g. water) availability data at the smallest scale possible;
- Data on local climate impact predictions;
- Government priorities in times of resource (e.g. water) shortages.

B. Incorporating Environmental Uncertainty into Analysis

WRI and HSBC used scenario and sensitivity analysis to deal with the challenges of environmental uncertainty.

The examples below describe how this type of analysis could be conducted with companies in the power sector to assess project and company exposure to water risks:

- *Sensitivity analysis*: For plants dependent on freshwater resources, conduct a plant level sensitivity analysis of IRR impacts of outages and load losses. This will reveal which companies have the highest financial risk tied to disruptions.
- *Scenario analysis*: Develop scenarios around water availability at the river basin level for each plant based on future projections (if available) or key risk factors present at the local level. When combined with the sensitivity analysis above, this provides insight into which plants are most at risk from water constraints and the potential magnitude of financial impact.
- *Management quality analysis*: Assess and rank companies based on their strategies for mitigating water risk (e.g. the extent of their water management strategies; their

utilization of advanced technologies, such as air cooling, to reduce water dependency). Use this information to appropriately adjust conclusions from the sensitivity and scenarios analysis detailed above.

C. In Summary

This paper concludes a collaborative research project between WRI and HSBC, which aimed to better understand the financial materiality of environmental trends affecting selected sectors in Asia. The reflections in this note draw on insights gained from the project as well as feedback from the region's financial community, to frame the key challenges to analyzing the financial impacts of emerging environmental trends in the region.

The availability and quality of environmental data in South and Southeast Asia remain limited, despite broad consensus that environmental trends are likely to have negative impacts across the region. This situation makes the need for better disclosure and environmental analysis all the more pressing and illustrates the clear role that Asia's financial community can play in addressing this important gap.

Quote from CFA event

"I never knew the effects [of environmental trends] could be so grave going forward...I am now concerned that [factoring in] such risks [is] a must for conducting research and analysis."

Literature Review

- Business for Social Responsibility. June 2008. *Environmental, Social and Governance: Moving to Mainstream Investing?*
- Business for Social Responsibility. September 2009. *ESG in the Mainstream: The Role for Companies and Investors in Environmental, Social, and Governance Integration.*
- Bennett, Charles J., Ph.D., Ivo Knoepfel, and David Vidal. October 2005. "Expanding the Investment Frontier: Factoring Environmental, Social and Governance Criteria into Investment Analysis". The Conference Board.
- Economist Intelligence Unit. 2009. *Sustainable investing in emerging markets: Returns for the long run.*
- Enhanced Analytics Initiative. December 2008. *Research Center Stage: Four years of the Enhanced Analytics Initiative.*
- European Centre for Corporate Engagement. March 2007. *Use of extra-financial information by research analysts and investment managers.*
- International Finance Corporation. January 2009. *Outcomes of the Who Cares Wins Initiative 2004–2008: FUTURE PROOF? Embedding environmental, social and governance issues in investment markets.*
- Investor Network on Climate Risk and Ceres. January 2010. *A Survey of Asset Managers' Practices: Investors Analyze Climate Risks and Opportunities.*
- Mercer. November 2009. *Shedding light on responsible investment: Approaches, returns and impacts.*
- Responsible Investor. 2009. *The Future of ESG Integration.*
- United Nations Environment Programme Finance Initiative Asset Management Working Group. 2006. *Show Me The Money: Linking Environmental, Social and Governance Issues to Company Value.*
- United Nations Environment Programme Finance Initiative Asset Management Working Group. October 2009. *The materiality of climate change: How finance copes with the ticking clock.*
- United Nations Environment Programme Finance Initiative Asset Management Working Group and Mercer. October 2007. *Demystifying Responsible Investment Performance: A review of key academic and broker research on ESG factors.*
- United Nations Environment Programme Finance Initiative Asset Management Working Group. July 2009. *Fiduciary responsibility: Legal and practical aspects of integrating environmental, social and governance issues into institutional investment.*
- United Nations Environment Programme Finance Initiative Asset Management Working Group and the United Kingdom Social Investment Forum (UKSIF). 2007. *Responsible Investment in Focus: How leading public pension funds are meeting the challenge.*
- United Nations Principles for Responsible Investment (UN PRI). 2009. *2009 Annual Report on Progress.*
- World Business Council for Sustainable Development and United Nations Environment Programme Finance Initiative Asset Management Working Group. March 2010. *Translating environmental, social and governance factors into sustainable business value.*

About WRI

The World Resources Institute (WRI) is an environmental think tank that goes beyond research to find practical ways to protect the earth and improve people's lives. Our mission is to move human society to live in ways that protect Earth's environment and its capacity to provide for the needs and aspirations of current and future generations.

Because people are inspired by ideas, empowered by knowledge, and moved to change by greater understanding, WRI provides—and helps other institutions provide—objective information and practical proposals for policy and institutional change that will foster environmentally sound, socially equitable development.

WRI organizes its work around four key goals:

People & Ecosystems: Reverse rapid degradation of ecosystems and assure their capacity to provide humans with needed goods and services.

Governance: Empower people and support institutions to foster environmentally sound and socially equitable decision-making.

Climate Protection: Protect the global climate system from further harm due to emissions of greenhouse gases and help humanity and the natural world adapt to unavoidable climate change.

Markets & Enterprise: Harness markets and enterprise to expand economic opportunity and protect the environment.

In all its policy research and work with institutions, WRI tries to build bridges between ideas and action, meshing the insights of scientific research, economic and institutional analyses, and practical experience with the need for open and participatory decision making

About the Authors

Dana Krechowicz is an Associate in the Markets and Enterprise Program at WRI. dkrechowicz@wri.org

Shally Venugopal is an Associate in the Markets and Enterprise Program at WRI. svenugopal@wri.org