Chapter 25

Global Finance and the Environment

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Introduction

This chapter considers the relationship between global finance and the environment. The health of the global environment is increasingly vulnerable. The principal drivers of environmental degradation have been the exponential increase in demand for natural resources – including fossil fuels, fresh water, basic minerals, and food – and the widespread pollution associated with their consumption, including greenhouse gas emissions. The scale of natural resource use has been greatly facilitated by the transformation of finance from being organized within a tapestry of interdependent national markets to being an increasingly integrated global system. Yet, research in international political economy has only recently begun to consider how the globalization of financial markets may impact the state of the environment and global environmental governance (Helleiner and Clapp 2012).

This chapter aims to contribute to this emerging area of research by providing an overview of the ways in which global finance impacts the environment, emphasizing a core set of institutional rules and financial actors. With reference to the latter, the analysis does not focus on government-owned financing mechanisms explicitly mandated to promote environmental sustainability (see Matz 2005; van Putten 2008; Park 2012). Instead, it considers the most important mainstream financial institutions with long-term investment mandates. The first section identifies three pathways of influence – systemic, institutional, and instrumental. The second section examines the current state of corporate environmental accounting, reporting, and stock-listing requirements. The third and fourth sections consider the extent to which a set of long-term investors – pension funds, sovereign wealth funds, project finance banks, and export credit agencies – address environmental issues in their investment practices. The concluding section summarizes the analysis and looks ahead.

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Finance and the Environment: Three Pathways of Influence

The state of the environment today cannot be understood without reference to how the global economy is organized and the patterns of resource production and consumption it encourages (Richardson 2008; Newell and Paterson 2010). Finance plays a significant role in sustaining the global economy by mobilizing capital for energy, infrastructure, manufacturing, and technological innovation. The cost of capital is an important determinant for whether different economic activities are commercially viable and, by implication, whether governments and companies are able and willing to pursue them. Economic booms and busts in industries that have a positive or adverse impact on the environment – whether it is renewable energy generation or open-pit coal mining – are often preceded by shifts in investor sentiments that move capital in or out of particular companies and projects. Overall, patterns of capital allocation across time and space shape the choices governments, companies, and consumers make, and thereby greatly influence the environmental consequences of economic life.

Systemic Impacts

Three systemic features of the global financial system are particularly relevant to global environmental governance. First, financial markets in the current wave of globalization are even more integrated across geographic regions, financial products, and financial services than in previous periods of global economic convergence (Porter 2005; Cerny 2010). Global financial integration has facilitated greater international capital flows but also increased the exposure of governments and companies to financial volatility and shocks. The Latin American debt crisis in the 1980s put pressure on debtor countries to rapidly increase exports of natural resources to an unsustainable rate in order to quickly generate hard currency to service debt and make up for shortfalls in public finances (WCED 1987). The Asian financial crisis in 1997–1998, while reducing regional demand for natural resources, induced a rise in illegal fishing, logging, mining, waste disposal, and clearing of degraded forests for plantations, in part as a result of cuts to government budgets that weakened environmental law enforcement (Dauvergne 2005: 180). Since the global financial crisis in 2008–2009, a number of European governments have scaled back fiscal subsidies and research funding that supported the development and deployment of renewable energy (Bloomberg New Energy Finance 2011: 23).

Second, the structure of financial markets is increasingly shaped by financial innovation. As an example, the creation of global voluntary and regulated carbon markets has allowed companies in the clean technology and renewable energy sectors to obtain financing from investors in disparate places beyond what they otherwise would have access to (Lederer 2010). The emergence of an environmental bond market – underpinned by financial relationships between public and private financial institutions and project developers – provides an additional source of green financing (OECD 2011: 16). However, financial innovations in securitization, coupled with technological developments in investment execution, have also encouraged investors to adopt shorter investment time horizons when deciding on investment strategies

and making investment decisions (MacKenzie 2011). Investors with short time horizons – such as hedge funds – and the use of short-term financial instruments – such as derivatives – have become much more widespread than previously. While adding liquidity to capital markets, short-term finance has been found to generate adverse impacts beyond the financial system itself. For example, derivatives markets in food commodities over the past decade have led to a "financialization" of agriculture and greater volatility in food prices, undermining sustainable land use and access to affordable food (Helleiner and Clapp 2012).

And third, structural changes in global stock markets have changed the relationship between companies and shareholders. Whereas individuals – advised by brokers – held most company stock five decades ago, institutional investors such as pension funds, mutual funds, and insurance companies dominate stock markets today. The globalization of national stock markets entails that a much smaller share of stock is now held by domestic investors. In their place, financial leverage in stock markets is concentrated among fewer financial institutions that invest across national markets. However, their power to change corporate behavior is mediated by increasingly lengthy investment chains with multiple intermediaries, whereby sources of capital rarely interact directly with their ultimate beneficiaries. In addition, large companies rely less on stock issuance for their financing needs than previously. While these developments entail that the relationship between companies and shareholders is becoming less consequential to the financing of corporate activities, the latter still retain leverage through the rights they have as owners.

Institutional Impacts

We can distinguish between three types of regulatory institutions that mediate the relationship between finance and the environment. First, there are financial regulations that have implications for how companies account for and report on their environmental impacts to shareholders and the investment community more broadly. Financial statements summarize the profits generated by a company within a given period by making a tally of assets, less liabilities. International financial accounting standards govern how companies prepare financial statements, including how company impacts on the environment are recorded (Thistlethwaite 2011). Corporate disclosure rules define the reporting obligations of companies, while corporate governance standards determine the responsibilities of company boards relative to shareholders. The extent to which such rules mandate companies to account for and report on their environmental impacts and future risks will not only influence corporate environmental management practices, but also whether and how investors account for environmental impacts when attributing value to a financial asset, such as a company stock. Stock exchanges also influence the corporate accounting, management, and reporting practices of listed companies through their indices, listing requirements, and monitoring activities (Siddy 2009; Morales and van Tichelen 2010).

Second, there are environmental regulations that are implemented through financial markets. Given the apparent failure of the Kyoto Protocol to achieve its environmental objectives, its most important legacy may be the emergence of regulated carbon markets as an institutional mechanism for mitigating global climate change.

The three flexible mechanisms under the Kyoto Protocol – emissions trading, joint implementation, and the clean development mechanism – each created new financial markets facilitating trades in carbon-related commodities and helping market participants manage transaction risks (Lederer 2010; Newell and Paterson 2010). These markets and the politics around them produced new spaces for financial actors to engage with environmental issues and shape regulatory responses to environmental problems. Looking ahead, financial transfers will likely remain a cornerstone of any grand bargain struck between states with the largest historical responsibilities for greenhouse gas concentrations in the atmosphere and states that are most rapidly increasing their emissions.

And finally, there are investor-led networks and associations that promote environmental objectives. In general terms, they fall into three categories. First, there are self-regulatory associations established by financial actors to develop and diffuse environmental commitments and standards in particular financial markets or among themselves and their peers (Pattberg 2007; Park 2012). Second, there are networks supported by investors that produce reporting standards and encourage companies to annually disclose how they manage environmental risks, including strategies, action plans, data on environmental impacts, and targets for reducing them (Kolk *et al.* 2008; Newell and Paterson 2010: 65–67). And third, there are investor-driven governance networks that are created to facilitate collective shareholder engagement and influence business-relevant environmental policy and regulation (MacLeod and Park 2011). They pursue their goals through shareholder activism, petitioning, open letters, and policy statements, as well as participating in public hearings and roundtables with regulatory agencies.

Instrumental Impacts

The evolution of the global financial system has coincided with a proliferation of financial institutions that differ in their ownership, mandates, activities, and size. Whereas it can be easy to identify companies that contribute to environmental harm – such as oil companies causing spills, power plants emitting air toxins, or timber companies clear-cutting virgin forest – it can be much more difficult to map the myriad of investors that provide them with capital and benefit from their profits (Richardson 2008: 3). While a comprehensive overview of this complex landscape is beyond the scope of this chapter, it is instructive to identify the main groups of financial actors that influence how financial markets interact with the environment. First, there are large funds that invest capital owned by others, mostly in stocks and bonds. This group includes pension funds, mutual funds, hedge funds, insurers, and sovereign wealth funds (SWFs). Second, there are banking institutions that issue loans and guarantees to companies, projects, and governments. These include commercial banks, government-owned banks, such as national infrastructure banks and multilateral development banks (MDBs), and export credit agencies (ECAs). Third, there are insurers and reinsurers that assist companies, financial institutions, and individuals to manage risks related to the physical environment (Paterson 2001). And finally, there are a large number of financial intermediaries that operate as brokers and advisors between those offering a financial asset – such as a stock or a bond – and those looking to invest in it.

Financial Regulatory Institutions and the Environment

During the last three decades, the deliberate facilitation among governments of the emergence of an integrated global financial system has made it more difficult for national financial regulatory agencies to provide effective regulation (Cerny 2010: 262). As there are no supranational institutions with legal authority akin to the World Trade Organization (WTO) to govern the global financial system, the enforcement of uniform national implementation of international standards and codes has been weak (Helleiner and Pagliari 2010: 3). The policy space left open by governments has been filled by numerous public and private networks and standard-setting organizations, many of which have overlapping mandates and jurisdictions (see also Chapter 23 in this volume). Compared to other policy fields, finance is notable for the significant influence exerted by businesses and industry associations over international regulatory structures central to the functioning of markets (Porter 2005). For example, the four largest accounting firms in the world hold powerful positions in the International Accounting Standards Board (IASB), the international body accepted by most governments as having the legitimate authority to set international financial accounting standards. In some cases, this balance between private and public interests has undermined rule-making that encourages financial institutions to make decisions in favor of the public good (Richardson 2008; Nölke 2010).

It is beyond the scope of this chapter to comprehensively review the challenges associated with regulating the systemic risks embedded in global finance. Instead, the analysis will focus on three sets of rules that are particularly relevant for understanding how finance impacts the environment: corporate environmental accounting, corporate environmental reporting, and stock-listing requirements.

Corporate Environmental Accounting

Financial accounting influences whether and how a company's impact on the environment is given a monetary value and reflected in corporate accounts and statements. International financial reporting standards (IFRS) – defined by the IASB – currently employ a high threshold for companies to record environmental liabilities and risks in their financial statements (Ascui and Lowell 2011; Thistlethwaite 2011). By implication, companies that have caused environmental harm are only in limited cases being expected to report these as either liabilities or risks. This means investors are not being encouraged by international financial accounting standards to divest from companies that cause environmental harm or invest more in those that avoid harm or generate environmental benefits.

There is limited institutional interaction between the policy community promoting corporate environmental accounting and reporting and the established accounting profession and its formal institutions. Private governance initiatives created to expand and standardize environmental accounting and disclosure – such as the Greenhouse Gas Protocol, the Global Reporting Initiative (GRI), and the Carbon Disclosure Project (CDP) – have emerged and evolved with only limited input from financial regulatory institutions. Furthermore, the growing field of carbon accounting – which can be defined as the measurement, collation, and communication of

carbon emissions data (Bowen and Wittneben 2011) – has yet to significantly inform financial accounting rules. Full-cost accounting and life-cycle analysis, each of which would facilitate the greater inclusion of environmental externality costs into corporate planning, are not accepted by current international accounting standards as legitimate methods of accounting (Prakash 2000: 26). Since the accounting profession tends to use existing accounting entities, such as taxes, leases, subsidies, and commodities, as references when addressing environmental risks and liabilities, it finds it difficult to accommodate the unique complexity of environmental causes and consequences (Ascui and Lovell 2011).

Corporate Environmental Reporting

There has been a proliferation of corporate environmental reporting during the last decade. Today, virtually all large companies in Europe and North America, and increasingly in other regions as well, report on their environmental risks and activities in annual sustainability reports, sections of their corporate web site, and in submissions to voluntary reporting initiatives. This has been encouraged and facilitated by investor-led reporting organizations. Each year since 2003, the CDP has sent a questionnaire to hundreds of listed companies – on behalf of hundreds of investors – asking them to publicly report on their climate risk strategies, risk assessments, actions plans, greenhouse gas emissions, and reduction targets (Kolk *et al.* 2008; Harmes 2011). The CDP encourages companies to report emissions in accordance with the Greenhouse Gas Protocol developed jointly by the World Resources Institute (WRI) and the World Business Council on Sustainable Development (WBCSD). In 2010, CDP created a similar annual survey for promoting corporate reporting on water risk management. The Forest Footprint Disclosure project and the Global Real Estate Sustainability Benchmark are two other investor-led organizations that work towards improving corporate environmental reporting through annual surveys.

These institutional developments have increased the volume of corporate environmental reporting from individual companies, and across geographic markets. Among a sample of 458 companies from the FTSE All-Share index, 99% referred to environmental topics in their 2009–2010 annual reports, and 67% published quantitative metrics on their environmental impacts (Environment Agency 2010). The most significant improvements in reporting quality have been in the area of climate change risks and energy use. Among the 458 companies on the FTSE All-Share index, 62% produced quantitative information on greenhouse gas emissions and/or energy consumption in 2009–2010, a 112% increase compared to 2006 (Environment Agency 2010). In 2003, the CDP was backed by 35 investors, and 221 companies chose to complete the questionnaire. By 2011, support had grown to 551 investors, and more than 2 124 companies responded, including 81% of the Global 500, 68% of the Standard & Poors 500, and 83% of the South Africa 100 companies (Carbon Disclosure Project 2011).

The growth of voluntary reporting seems to have encouraged some governments to embed environmental disclosure requirements in mandatory disclosure rules. All companies with high emissions covered by the EU's emissions trading system have

been required to report verified carbon emissions figures since 2005 (Ascui and Lovell 2011). EU member-states' implementation of the EU Accounts Modernisation Directive (AMD) and the EU Transparency Directive has further encouraged the strengthening of environmental reporting requirements at the national level. For example, the UK Companies Act of 2006 requires companies to include in their annual reports an assessment of environmental risks and uncertainties, corporate policies and their effectiveness, and key performance indicators (Environment Agency 2010). The Danish government introduced a mandatory requirement in 2009 that all large companies publicly report on their corporate social responsibility commitments and activities. In Sweden, all state-owned enterprises are required to report on their environmental and social performance according to GRI guidelines. In the USA, the Securities and Exchange Commission (SEC) has issued rules that require companies to disclose how environmental laws may influence their capital expenditures, earnings, and competitive position, and also to disclose information on ongoing legal proceedings involving environmental liabilities.

Notwithstanding these developments, corporate environmental reporting remains uneven, reflecting weak and poorly coordinated institutions. First, companies retain significant discretion in deciding what and how to report. Voluntary standards are not monitored and enforced. National regulations on environmental reporting are much less prescriptive than those addressing financial reporting, and enforcement is often weak. When information is not collected and reported according to standardized metrics, investors will find it cumbersome to determine whether the environmental performance of one company is better or worse than another (Kolk *et al.* 2008; Solomon *et al.* 2011). In aggregate, this results in information that is insufficiently comprehensive to understand and compare the environmental impacts of different companies, and how they may be impacted by environmental change. Second, corporate environmental reporting varies significantly by region, reflecting variations in commitments among companies to corporate social responsibility, and demand among investors and other stakeholders for such information. In general, European companies tend to be the most transparent, followed by North American companies, with those in Asia and Latin America the least transparent.

And third, much of the information on how companies impact the environment is either not integrated into traditional financial reporting, or done so in an inconsistent manner. For example, among companies covered by the EU ETS, some have chosen not to disclose their carbon liabilities on their balance sheets, whereas others are charging them to their income statements (Solomon *et al.* 2011). Within companies, the annual process of writing a report covering environmental and social issues – commonly known as a sustainability report – is often undertaken separately from the process of writing financial reports. As a result, companies often fail to communicate whether the analysis and results in one report may affect or be affected by the analysis and results in the other. Among the sample of 458 companies from the FTSE All-Share index surveyed for their environmental disclosures, only 36% included some environmental information in audited sections of their respective annual reports (Environment Agency 2010). This is a concern given that many companies may have strong incentives to withhold or manipulate information about environmental harms that may undermine their reputation (Vogel 2006).

Stock-listing Requirements

Stock exchanges act as gatekeepers for public equity markets by setting the terms and conditions for companies to raise capital from investors by issuing shares. Exchanges that are members of the World Federation of Exchanges (WFE) transacted over US$80 trillion in 2008, facilitating millions of transactions between buyers and sellers of corporate stocks (Morales and van Tichelen 2010). Each stock exchange has listing requirements that are meant to ensure that listed companies provide basic financial information about themselves to the investing public. They are designed to build confidence among investors of the quality of company management underpinning all stocks listed on the exchange. Institutional investors, such as pension funds, mutual funds, and sovereign wealth funds, account for a significant share of investment activity at the largest stock exchanges. Many of them systematically invest capital in all companies listed on the exchange according to a weighted index. The prevalence of index-based investing entails that any company added to a stock exchange or issuing new stock is guaranteed an immediate demand for its newly listed stocks.

In recent years, many stock exchanges have included references to environmental reporting in their listing requirements, commonly in the form of voluntary guidance. Perhaps the most far-reaching is the Shanghai Stock Exchange, which requires companies in highly polluting industries wishing to issue stocks to obtain a permit from the Chinese Ministry of Environmental Protection (Siddy 2009). The permitting process subjects the company to an environmental assessment, including a short public consultation process. According to the rules, all listed companies are required to disclose information relating to environmental protection, and breaches of compliance may be subject to investigations, fines, and public outing. In South Africa, the King Codes on Corporate Governance require companies listed on the Johannesburg Stock Exchange to integrate sustainability disclosures with annual reports (Morales and van Tichelen 2010). Other stock exchanges have issued guidance that encourages voluntary environmental reporting, with some including a "report, or explain" requirement. Furthermore, there has been a proliferation of sustainability indices that use environmental, social, and governance criteria to identify a subset of listed companies on an exchange. Some comprise only clean technology and renewable energy companies, whereas others track companies with superior environmental performance across industrial sectors. Between 1999 and 2009, the number of such indices grew from fewer than 5 to more than 50 (Siddy 2009).

Institutional Investment and the Environment

Institutional investment refers to capital allocation that is carried out by investment organizations on behalf of one or more investors. Among the most important institutional investors in global stock markets by size are pension funds investing capital on behalf of pension beneficiaries, and sovereign wealth funds mandated to invest in global capital markets in accordance with a variety of national policy objectives. In OECD countries alone, pension funds are estimated to hold US$28 trillion in financial assets, with annual in-flows from new contributions of approximately US$850 billion (OECD 2011: 10). As much of this capital is typically invested in stock

markets, pension funds collectively own a large share of listed companies in the major economies, potentially giving them significant influence across industries (Woods 2009). Meanwhile, sovereign wealth funds are government-owned investment vehicles mainly created to safeguard and augment national wealth. In general terms, they either derive capital from the production and sale of a commodity, for instance oil, gas, or minerals (commodity funds), or from sovereign budget surpluses, trade surpluses, and/or central bank currency reserves. They are estimated to collectively hold at least US$3–4 trillion in capital, projected to rise as much as US$10 trillion by 2015 (Monk 2009), which is more than hedge funds, private equity funds, and all of official development assistance combined. Compared to pension funds, sovereign wealth funds are generally less transparent with their investment strategies and portfolios (Bahgat 2008).

Many institutional investors have publicly committed to address environmental issues in their investment practices, and some report how they have implemented this commitment. Among the 539 signatories to the UN Principles for Responsible Investment (UN PRI) that chose to fill out its annual survey in 2011, 94% of fund owners indicated that they have a responsible investment policy, 79% said they integrated ESG factors to "some" or "a large" extent into internally managed (active) investments in developed market listed equities, whereas 30% of investment managers had invested in clean technology funds (UN PRI 2011). An industry survey of 12 institutional investors, representing almost US$2 trillion in assets under management, found that half had undertaken or had plans to make changes to their actual asset allocations in order to respond to climate change, whereas more than half had or would increase their engagement on climate change with companies and policy-makers (Mercer 2012). Solomon et al. (2011) interviewed professionals in 20 leading investment institutions in the UK with responsible investment roles and found that many asked companies to disclose how they managed climate change risk in order to encourage changes in corporate behavior.

Institutional investors committed to socially responsible investment (SRI) have typically engaged in some or all of four types of investment practices (Vogel 2006: 60–65). First, they have divested from companies operating in certain sectors associated with unethical products or companies that have engaged in acts of corporate misconduct. The practice of negative screening dates back to at least the 1970s, when religious groups first asked fund managers to invest their capital in a way that conformed to their moral codes (Richardson 2008: 73–79). Today, the most common sector exclusions are tobacco, alcohol, pornography, and weaponry. Some investors also divest from companies in other industry sectors that are complicit in major environmental damages or human rights abuses. Second, investors have established special funds that invest only in companies operating in industrial sectors that generate public goods. Such positive screening has benefited companies in the clean technology and renewable energy sectors, as well as companies operating in poor countries or promoting social development. Third, investors have used environmental criteria alongside more conventional financial criteria when designing stock portfolios and weighted capital towards companies with superior environmental performance. For example, they may invest in companies in the Dow Jones Sustainability Index, which tracks the financial performance of multinational companies identified by Dow Jones as leaders in sustainability. The emergence of such indices has provided incentives for

companies to improve their environmental performance and report positive results so as to raise capital from investors committed to overweight such companies in their portfolios. And fourth, investors have used their rights as shareholders in companies to engage with company boards on environmental issues and put forward and vote on shareholder resolutions at annual general meetings (Clark *et al.* 2008). In recent years, a number of institutional investors have collaborated to demand that shale gas companies listed in the USA would publicly report on the environmental risks associated with the process of hydraulic fracturing. In 2011, 315 investors joined engagement activities coordinated by the UN PRI through its web-based clearing-house, including a joint initiative by 33 investors to send letters to 92 companies in energy-intensive sectors asking them to disclose plans for reducing their greenhouse gas emissions (UN PRI 2011: 12).

Pension funds have also defined and advanced shared environmental objectives and public policy positions through collaboration (MacLeod and Park 2011). UN PRI has encouraged nearly 1000 asset owners, fund managers, and financial services firms to publicly endorse six principles of responsible investment (UN PRI 2011). CERES, the sustainable business coalition, has drafted a document that outlines specific actions that institutional investors expect companies to undertake in the area of corporate climate risk management (CERES 2012). Investor associations have also emerged as influential actors in public policy-making. European Social Investment Forum (Eurosif) is a pan-European network based in Brussels with affiliates at the national level that produces advocacy research and directly lobbies the EU to facilitate socially responsible investment practices. In 2011, the International Investors Group on Climate Change (IIGCC) mobilized 285 investors in support of a call on governments "to work towards a binding international treaty that includes all major emitters and that sets short-, mid-, and long-term greenhouse gas emission reduction targets" (IIGCC 2011). In 2007, the Investor Network on Climate Risk (INCR), affiliated with CERES, lobbied the SEC to issue rules that make it mandatory for companies to disclose their climate risks (Richardson 2008: 139).

With regards to assessing the impact of these practices on financial markets, an important measure is whether financial institutions are allocating a greater share of their capital toward companies that make profits from environmentally sustainable technologies and activities. In aggregate, only a small share of global capital is invested in economic activities that are environmentally sustainable in the long term (Kolk *et al.* 2008; Harmes 2011; OECD 2011). One cause is that a growing share of financial activity finds its purpose in generating returns through short-term buying and selling of stocks. This has become more widespread with the emergence of information and communication technologies that provide greater opportunities for investors – including those with mandates to generate long-term returns – to make money from financial volatility through arbitrage. As an indication, over half of the volume of share trading in US stock markets is undertaken by computer programs that buy and sell at speeds and volumes that exceed human capabilities (MacKenzie 2011). Around-the-clock financial news coverage has further encouraged investors to make decisions on the basis of single market events rather than long-term market trends. As a result, companies are increasingly under pressure to report on their financial results at shorter and shorter intervals and pursue investment strategies that maximize quarterly earnings (Vogel 2006: 67).

While there is no broader market momentum toward environmental investing (Haigh and Shapiro 2011), financing for renewable energy and clean technology is growing rapidly, including among institutional investors. In 2011, global investment reached a new record of US$260 billion, a more than fivefold increase since 2004 (Bloomberg New Energy Finance 2011). The growth was driven by investments in utility-scale renewable energy projects and rooftop photovoltaics. To some extent, pension funds and sovereign wealth funds have contributed to this rise. For example, the California Public Employees' Retirement System (CalPERS) has invested US$500 million in a new clean energy fund tracking a climate change investment index, while Danish, Dutch, and US pension funds purchased large stakes in onshore and offshore wind farms (Bloomberg New Energy Finance 2011). Meanwhile, the governments of China, Abu Dhabi, and Indonesia, amongst others, have established separate clean energy funds to invest in renewable energy projects. The Norwegian Pension Fund – Global, which invests the country's oil wealth – has allocated US$4.6 billion to various environmental investments and also excludes companies from its global equities portfolio that it has found to be complicit in major environmental damages (Bahgat 2008).

These examples notwithstanding, environmental investments account for less than 1% of pension fund portfolios (OECD 2011: 6). This can be explained by factors both internal and external to pension funds. Many pension fund trustees do not regard environmental considerations to be within the parameters of their fiduciary duty to generate financial returns for pension beneficiaries (Woods 2009). Drawing on modern portfolio theory, most large funds wishing to generate stable, long-term, average returns have adopted so-called "passive" investment strategies that are based on wide diversification within and across stocks, bonds, and other asset classes. This is implemented through index investing, in which capital may be provided to all companies listed on particular stock exchanges. By implication, returns on investment will correlate strongly with the stock market as a whole. Given that industries associated with long-term environmental harm – such as oil, gas, and mining – are also among those that have historically generated the highest and most stable returns on investment, funds may find it hard to omit them without changing their returns expectations. This explains why large funds structured to generate long-term average market returns rarely use environmental data in a systematic way for portfolio selection purposes (Haigh and Shapiro 2011).

Moreover, the structure of global institutional investment, and, relatedly, the process of investment management favored by most large funds, creates some challenges to incorporating long-term environmental concerns into investment decisions. Most institutional investors have delegated investment decisions to other financial institutions, so-called fund managers (Sullivan and MacKenzie 2006). They do this to save administrative costs and benefit from the knowledge of fund managers with specialized expertise in particular markets. While providing many benefits, this approach creates agency problems. In particular, while fund owners may wish to invest long term, they may also find it necessary to at least annually review the financial performance of fund managers in order to hold them accountable. In practice, most fund owners – or pension beneficiaries for that matter – would not accept poor short-term returns over an extended period of time (Woods 2009). In turn, most fund managers are not encouraged to make investment decisions based on long-term time

horizons and follow investment approaches that conflict with market norms (Harmes 2011).

These challenges internal to the investment process are compounded by an institutional environment that does not sufficiently encourage companies and investors to support sustainable development (Rowlands 2005; Newell and Paterson 2010; OECD 2011). Notwithstanding notable developments in domestic and international environmental policy, companies are not being sufficiently discouraged by regulations, taxes, and fiscal policies to harm the environment, and, conversely, they are not being sufficiently rewarded to invest in economic activities that are comparatively environmentally benign. Symptomatically, non-hydro renewable energy has attained the greatest market share in countries where fiscal regimes and government financing have provided companies and investors with risk guarantees to develop other energy sources, such as wind, solar, geothermal, and biomass (Bloomberg New Energy Finance 2011). Markets are being given mixed signals, since governments are also pursuing other, and sometimes competing, energy policy objectives through fiscal instruments. In 2010, subsidies to fossil fuel consumption reached US$409 billion, compared to US$66 billion for renewable energy, as a result of governments wanting to boost domestic economic output, maintain employment, develop technology, and alleviate energy poverty, alongside promoting renewable energy (IEA 2011: 508). In part encouraged by these government programs, the 70 leading oil and gas companies invested more than US$500 billion in oil and gas exploration and production in 2010, which is expected to rise to an average of US$620 billion per year until 2035 (IEA 2011: 142–144).

Even if public policy encourages companies to pay for the cost of their pollution, asymmetric information may prevent capital markets from reallocating capital to those that are more environmentally friendly. Besides being largely qualitative, of lesser quality, and often unaudited, environmental information is typically only reported on an annual basis. In comparison, financial results and projections are in most cases released at least quarterly, while changes to stock prices are updated instantly. Moreover, many companies do not explain the relevance of their environmental impacts and risks to their overall financial performance. The difference in reporting intervals and the lack of integration with financial metrics further solidify the impression that environmental information is of lesser relevance and not material to the financial performance of the company. In turn, fund managers that are asked to invest on the basis of financial valuations of stocks can in most cases discount environmental information from their company analysis without being sanctioned in the form of lesser returns, at least in the short term.

Project Finance, Export Credits, and the Environment

Whereas pension funds, and to a much lesser extent sovereign wealth funds, have adopted SRI policies largely in response to the ethical concerns of their beneficiaries, the global banking industry has done so mainly in response to public pressure from environmental NGOs (van Putten 2008; Park 2012). Standards development has taken place within industry networks and associations, facilitated by international organizations with explicit environmental mandates, such as the UN Environment

Programme (UNEP) and the World Bank. More than 200 banks and insurers, by virtue of being members of the UNEP Finance Initiative "regard financial institutions to be important contributors to sustainable development, through their interaction with other economic sectors and consumers and through their own financing, investment and trading activities" (UNEP FI 2011). Its main impact has been to mobilize banking and insurers around general principles of environmental stewardship, build networks of environmental finance professionals across regional markets, and generate new knowledge about how to implement commitments in practice (Park 2012). In 2003, commercial banks that provide project finance loans created the Equator Principles, a voluntary framework to harmonize environmental and social risk management practices according to those developed by the International Finance Corporation (IFC), the private-sector financing arm of the World Bank (van Putten 2008: 178–217; Wright 2012). The framework is designed to inform the way banking institutions engaged in project finance identify, assess, and mitigate the environmental and social impacts of projects, particularly in countries with weak or poorly enforced laws protecting the environment and human rights (Equator Principles 2006). It has been voluntarily adopted by more than 70 public and commercial banking institutions.

Both UNEP FI and the Equator Principles have encouraged financial institutions to develop and disclose policies for managing environmental risk. They have also established working groups and held conferences and workshops to facilitate the sharing of knowledge, ideas, and experiences between financial institutions (Park 2012; Wright 2012). UNEP FI issues policy briefs and technical guides that identify challenges facing financial institutions and methodologies for undertaking responsible investment practices. The Equator Principles Association has published best practice guidance on how financial institutions should incorporate environmental and social considerations into loan documentation, and how they should publicly report on their implementation of the Equator Principles. Although it is difficult to ascertain the direction of causality, studies have found that financial institutions that have adopted the Equator Principles are more likely to have published environmental lending policies than those who have not (BankTrack 2010).

Finally, most governments with export-oriented economies have established national ECAs to help domestic export companies sell goods and services to importers in other countries. They are commonly structured as public or semi-public institutions mandated to meet demand among national companies for export credits and risk guarantees. Their primary purpose is to promote domestic employment and growth through export subsidization. In 2010, global export credit volumes reached a record US$514 billion (Wright 2011: 134). Most financing benefited industries of strategic importance that are also exposed to significant commercial and non-commercial risk, such as commercial aircraft, aerospace technology, armaments, industrial plants, energy infrastructure, and transportation systems. Their association with these industries has subjected many ECAs to public criticism. In 2003, OECD governments negotiated the Common Approaches on Environment and Officially Supported Export Credits, a set of non-binding, consensus-based rules for harmonizing environmental and social standards for providing medium- and long-term export credits and risk insurance (OECD 2007; Schaper 2007). By doing so, they committed to have their respective agencies publish an environmental policy,

adopt the environmental screening process used by multilateral development banks, and "benchmark" projects against host country standards and the IFC Performance Standards in the case of private sector projects (OECD 2007: 5–6). These rules complement existing governance arrangements negotiated by OECD governments to self-regulate their export financing practices.

It is difficult to assess the impact of these networks and associations on actual lending and export financing decisions, given the lack of transparency around specific transactions. It is easier to assess whether reforms proposed by critics have been accepted and implemented by financial institutions (BankTrack 2010). They fall into three broad categories. First, critics have called for greater transparency around financing decisions and the environmental and social conditions attached to financial instruments. The Equator Principles require financial institutions to annually report on the number of projects they have financed across three categories of environmental risk. The OECD Common Approaches require ECAs to publish an environmental policy and report annually on its implementation to the OECD Export Credit Group. But neither framework requires the disclosure of transaction-level information on environmental management. Second, critics have demanded recourse for local communities adversely affected by projects financed by signatories to the Equator Principles or ECAs governed by the OECD Common Approaches. The Equator Principles do not hold financial institutions directly accountable to local communities adversely affected by their project financing, but they do require them to demand that companies receiving their project loans establish a grievance mechanism that allows individuals to file complaints and receive a response. Meanwhile, the financing decisions made by ECAs can be challenged only if provided for by home-country laws and regulations. And finally, critics have called on financial institutions to refrain from financing projects in sensitive ecosystems or of a certain type (large dams, coal-fired power plants). Neither framework has challenged the right of financial institutions to decide for themselves how to allocate their capital, as they are allowed to support projects that do not meet the respective standards if they feel this is justified (Equator Principles 2006: 3; OECD 2007: 6).

In summary, both the Equator Principles and OECD Common Approaches are designed to address the environmental impacts of particular forms of financing and are overwhelmingly focused on mobilizing support behind general aspirations and commitments, and gaining acceptance for certain procedures for identifying, assessing, and managing environmental risks. Given that neither framework intends to dictate investment decisions, it is problematic to use the outcome of a particular financial transaction as evidence of whether a financial institution has acted on its commitments (Wright 2012). The growth of the project finance market since the emergence of the Equator Principles demonstrates that the framework has not significantly influenced which projects banks choose to finance or, conversely, whether companies developing projects likely to have significant adverse environmental impacts are able to raise the necessary financing. Similarly, the OECD Common Approaches have done little to curtail the growth of export financing to industries associated with significant environmental harm. The main impact of both frameworks has been that the standards governing the undertaking of environmental impact assessments and consultations with project-affected communities have been raised and more widely adopted.

Conclusion

This chapter has considered the relationship between finance and the environment. At the systemic level, it finds that the structure of global finance has given rise to new forms of environmental investment, but also increased financial instability and encouraged short-term investing. This has created an uncertain and unstable environment for governments, companies, and investors to make long-term decisions and plan for the future. The discussion of environmental accounting and disclosure revealed how rules remain weak and fragmented compared to those governing financial accounting and disclosure. While not all environmental problems can be solved through better corporate accounting and disclosure, the current situation can be remedied by moving away from the parallel development of financial and environmental reporting, toward an integration of institutional rules at the national and international level. And finally, at the level of financial actors, the discussion centered on the roles and impacts of pension funds, sovereign wealth funds, banks, and export credit agencies. While the adoption of environmental commitments among them has been pervasive, this has not caused a significant shift in financial activity towards environmental investing. It reflects how the mandates, strategies, and investment practices of most financial institutions contain strong biases in favor of investing in companies that provide, or depend on, natural resources that are essential for human consumption and wealth.

Rectifying this seemingly depends on government actions that cause a shift in the risk-adjusted returns from investments that cause environmental harm to those that promote environmentally sustainable development. Finance is predominately motivated by an overarching purpose of finding financial value in physical or intangible assets within a set of institutional rules and market conditions. For government-owned financial institutions, these institutional rules often reflect political imperatives. It is difficult to foresee a growth in environmental investing at a scale that is needed unless this is aggressively promoted by national and international policies. International financial regulatory reform that reduces financial market volatility and encourages long-term investing would seemingly benefit the environment. While financial institutions have tended to oppose new financial regulations that restrict or impose costs on their own financial activities, many have issued public support for international environmental policies and regulations that aim to regulate the activities of the companies they are invested in (IIGCC 2011). This suggests that long-term investors represent a nascent environmental policy constituency that could play an increasingly influential role in shaping global environmental governance through their financing activities and engagement with policy-makers and standard-setters.

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