



Will Private Finance Support Climate Change Adaptation in Developing Countries?

Historical Investment Patterns as a Window on Future Private Climate Finance

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Cover Photo: Cow dung drying in Haryana, Northern India, for
use as a domestic energy source amongst rural households.
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Historical Patterns as a Window on Future Private-Sector Climate Finance

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ABSTRACT

Private-sector finance has been widely embraced as an important part of efforts to scale up resources for developing countries to respond to climate change. Yet there has been very little analysis of what private finance means for developing countries, and whether it will really deliver what is intended. This paper explores what historical patterns of investment reveal about the potential for the private sector to play a significant role in raising and delivering climate finance, specifically in the context of the adaptation needs of developing countries. It finds that private-sector finance is unevenly distributed among countries and among sectors, and it often does not match developing countries' most pressing needs. It also notes that it is important to differentiate between different financial flows – foreign direct investment equity vs. portfolio equity, for example, and equity vs. lending – and more closely scrutinise both financial flows and outcomes. These observations have important implications for those tasked with designing an international regime that will stimulate, govern and account for climate finance flows to developing countries. It should not be taken for granted that the private sector will succeed in tackling adaptation challenges where in the past it has, on the whole, failed to alleviate poverty and livelihood threats in many of the poorest parts of the world. More robust analysis is needed of what the private sector can actually contribute towards adaptation efforts, and who will benefit.

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EXECUTIVE SUMMARY

The importance of private finance amongst efforts to scale up resources for developing countries to respond to climate change is touted enthusiastically by multilateral finance institutions, international climate negotiators, United Nations agencies, the research community and the finance industry itself. Yet there has been very little analysis of what private finance means for the intended recipients – developing countries – and whether it will really deliver what is intended.

This paper asks the question: *What do historical patterns of investment reveal about the potential for the private sector to play a significant role in raising and delivering climate finance, specifically in the context of the adaptation needs of developing countries?* It examines the historical distribution of both equity and debt flows (including foreign direct investment, portfolio investment and international bank lending) between regions and countries, sectors, and between new projects (“greenfields”) and existing activities. Its findings illuminate broad behavioural patterns among private investors that are likely to have consequences for the delivery of climate-relevant private finance in developing countries.

It is clear that both equity and debt finance are heavily concentrated in a relatively small number of countries rather than evenly spread across the developing world. The major share of foreign direct investment (FDI) inflows to developing countries is directed to major emerging economies in East Asia (China), Latin America (Brazil and Mexico) and South Asia (India). Least Developed Countries (LDCs) see around 3 per cent of total FDI flows to developing countries. International bank lending follows a similar pattern.

Some key sectors in terms of livelihoods and adaptation needs in developing countries, such as water and agriculture, have either been relatively unattractive to private investment (for instance, water infrastructure in Africa), or seen investment in large-scale export-oriented activities but not in the small-scale production that sustains local populations (as with agriculture in Africa). Investment flows have instead tended to favour natural resource extraction over tertiary sectors such as health or education.

It is also clear that different parts of the developing world are less successful than others in attracting different types of finance, and this in turn has implications for their ability to invest in certain kinds of activities. Africa appears to have lower access to debt finance than other regions, as a portion of overall foreign capital, which is problematic since many adaptation measures are probably unsuited to attracting equity investors.

What also becomes clear once private flows are brought under the microscope is that not all are equal. Foreign direct investment (FDI) equity is not the same as portfolio equity. Equity is not the same as lending. Furthermore, some statistics on FDI and lending capture events which on the surface appear to be increased financial flows, but in reality simply reflect a change in ownership of assets or debts in developing countries rather than the provision of new resources. The climate finance discussion needs to better consider how to more closely scrutinise both financial flows and actual adaptation outcomes.

A recent trend towards quantification of “private climate finance” reflects a worrying feature of much of the broader climate finance discussion, that it proceeds without first giving proper and full attention to *what outcomes finance is intended to deliver*. In this respect, the discussion among research and policy communities needs to shift from “what can we measure, and therefore, what should we report?” (an approach taken by almost all of the efforts to date at quantifying private financial flows) to “what do we *need*, and therefore, what should we measure and report?”

The gaps in delivery of private finance also pose a major challenge for public finance, which must not only leverage new resources specifically for adaptation but also redirect investments to countries and sectors that currently miss out. At the same time, the fluctuating nature of investment flows, the

complicated behavioural patterns of private investors, and fundamental differences among financial instruments are not always clearly captured in simplistic statistics, which makes it difficult to meaningfully account for private finance. Nonetheless, accounting is crucial in the context of political commitments to drastically scale up resources to support developing countries.

These observations have important implications for those tasked with designing an international regime that will stimulate, govern and account for climate finance flows to developing countries. Even this coarse examination of investor behaviour raises questions about whether the private sector could succeed in tackling adaptation challenges where in the past it has, on the whole, failed to alleviate poverty and livelihood threats in many of the poorest parts of the world. More robust analysis is needed of what specifically the private sector might actually contribute towards adaptation efforts – both what this contribution will look like and who will benefit.

1. INTRODUCTION

Despite an intensifying rhetoric about the importance of private finance to global efforts responding to climate change, there has been little substantive analysis of how effective it might be in supporting adaptation in developing countries. If the notion of private climate finance is to gain greater credibility in the adaptation discussion, we need to better understand whether private finance will in fact flow to activities that generate adaptation benefits for vulnerable communities, and if so, how it is likely to be distributed between different kinds of activities, different countries, different demographic groups, and different forms. Without such analysis, the discussion on private finance remains unanchored.

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) agreed at the 16th Conference of the Parties (COP16) in Cancun in 2010 that USD 100 billion will be raised annually by 2020 – from both public and private sources – to support climate change initiatives in developing countries. A great deal of the focus following that commitment has been on the role that private sources of finance will need to play, and most commentary (at least within industrialised countries) argues that private finance will make up the bulk of the USD 100 billion figure (for example, Liebreich 2011). In a political sense it is thus becoming increasingly important to understand what “private climate finance” actually means and how it will be catalysed – and accounted.

When it comes to use of these funds, much of the debate has so far focused almost exclusively on financial resources that might support mitigation of greenhouse gas emissions. From a developing country perspective, however, the need is at least as great – arguably greater – for resources to enable adaptation to the unavoidable impacts of climate change. Irrespective of the political commitment, it is vital to get a clearer picture of what resources are likely to be available to poor, vulnerable communities, and the extent to which private finance might support their adaptation efforts.

The notion of private finance, both as an effective tool for communities in developing countries to support their adaptation needs and as an accountable portion of the international pledge, raises numerous questions and poses many challenges that are not hinted at in the enthusiastic rhetoric. Indeed, an assumption that the private sector can really deliver the financial resources needed by developing countries for adaptation seems strangely ahistorical. Private investment has been touted for decades as the most desirable way to improve livelihoods and reduce poverty, yet in much of the developing world, poverty and vulnerability remain as persistent today as decades ago. If for poor people the risks associated with climate change are closely linked to their existing vulnerabilities, why should we expect the private sector to succeed at addressing these problems, given its track record?

It is thus essential to unpack the rhetoric, to try to shed some light on questions that have so far been absent from the climate finance discussion about whether we can reasonably expect the private sector to play a significant role in supporting adaptation, and if so, in what ways it is likely to engage.

This paper is intended as an analytical input to policy discussions about the role that private-sector finance is to be expected to play in meeting the needs of developing countries and in delivering an accountable share of the annual USD 100 billion pledged within the COP.

It should be noted that there is still no definition of what kinds of finance are considered relevant in the context of the USD 100 billion pledge. Grants are surely eligible, various forms of concessional debt probably, but what about commercial debt? Equity? Are these modalities – which as commercial investments are expected to return a greater amount of finance to the source than was provided to the recipient – considered to be “climate finance” in the spirit of the COP agreement? Guidance on this has to come from the COP itself. This paper leaves open the political question of what instruments are relevant.

1.1 Objectives of this paper

The underlying questions asked in this paper are these: If developing countries are expected to rely to a large degree on private flows of finance to support their adaptation efforts, what do historical patterns of private sector investments in developing countries tell us about how and where we might expect private “climate finance” flows to be delivered? Who may benefit and who may miss out? Which activities might private-sector finance support, and which might not be supported?

These questions are approached by examining some general *patterns of investment* by the private sector – not climate finance but private investment more broadly – that might be of relevance specifically to adaptation. It is challenging to make a clear assessment of how private finance may thus far have contributed to addressing climate objectives, particularly since most private sector activity is not delivered under a “climate change” label. Rather than critique the achievement or not of climate-related outcomes, this paper examines broader patterns in financial flows. First, it reflects on temporal variations in private sector investment including the potential for changes in the direction of private capital flows. It then looks at how the private sector has tended to preference investment activity in developing countries between:

- different regions and countries;
- different economic sectors; and
- new (“greenfield”) and existing activities.

These are important parameters to consider in examining how effectively private finance might assist vulnerable communities in developing countries to cope with climate risks.

Finally, the paper discusses the implications these historical patterns might have for those tasked with designing a framework to ensure developing countries have access to adequate and effective financial support to respond to climate change.

1.2 What are private finance flows to developing countries?

In simple terms, commercial (i.e. non-philanthropic) private capital flows take the form of either equity or debt. It is important to analytically distinguish what the different flows and terms mean, since they are too often confused and mixed together in the climate finance literature. Figure 1 provides an overview of different sources of private finance, the modes through which funds are made available, and the form in which funds are delivered to recipients.

Equity flows involve those transactions which acquire either an ownership interest or a stock holding in a foreign enterprise, and generally consist of net foreign direct investment (FDI) equity (ownership) and portfolio equity (stock purchase). On a balance sheet, equity represents capital contributed by the owners or stockholders plus any “retained earnings” (net earnings from an investment that are not paid out as dividends but retained by the company for reinvestment or debt repayment), minus any accumulated losses. The equity form of capital is attracted by the production of goods or services that generates private benefits which can be captured by investors. Furthermore, FDI and portfolio equity are generally viewed as quite different from one another in terms of what they mean for recipients.

Debt involves forms of lending, in this case from an institution based in one country to recipients in another (developing) country. Loans are “financial assets that are created when a creditor lends funds directly to a debtor through an instrument that is not intended to be traded” (OECD 2008). A distinction is often made between short-term debt (which has an original maturity of one year or less and is commonly used for trade financing) and medium- to long-term debt. Debt is usually considered to be less restricted in its movement than direct and portfolio investments, partly because lending can be negotiated quickly compared to equity investments, and because it is considered more “liquid” than other flows (Rodríguez and Santiso 2007).

The concept of *foreign direct investment* (FDI) is commonly used in discussions about private investments. FDI has elements of both equity and debt, though often it is more closely associated with equity.¹ The United Nations Conference on Trade and Development (UNCTAD) describes FDI as consisting of equity capital, reinvested earnings and other capital. The “other” category comprises mainly intra-company loans from an office based in one country to a subsidiary or associate in another, as well as other non-equity modes such as subcontracting, management contracts, franchising, licensing and product sharing.²

The major component of equity *not* included in FDI is portfolio equity. Portfolio investments stem from large institutional investors such as pension funds and insurance companies, and are not directed at obtaining ownership or control of an activity. Instead, portfolio equity stakes are acquired through the purchase of tradable securities (or “stocks”) and portfolio investors usually have a shorter term focus for the extraction of profitable return. The creation and selling of stocks in a company (called “equity financing”) generates a one-off financial resource for use by the company. Any subsequent trading of stocks between investors does not generate new capital for the enterprise.

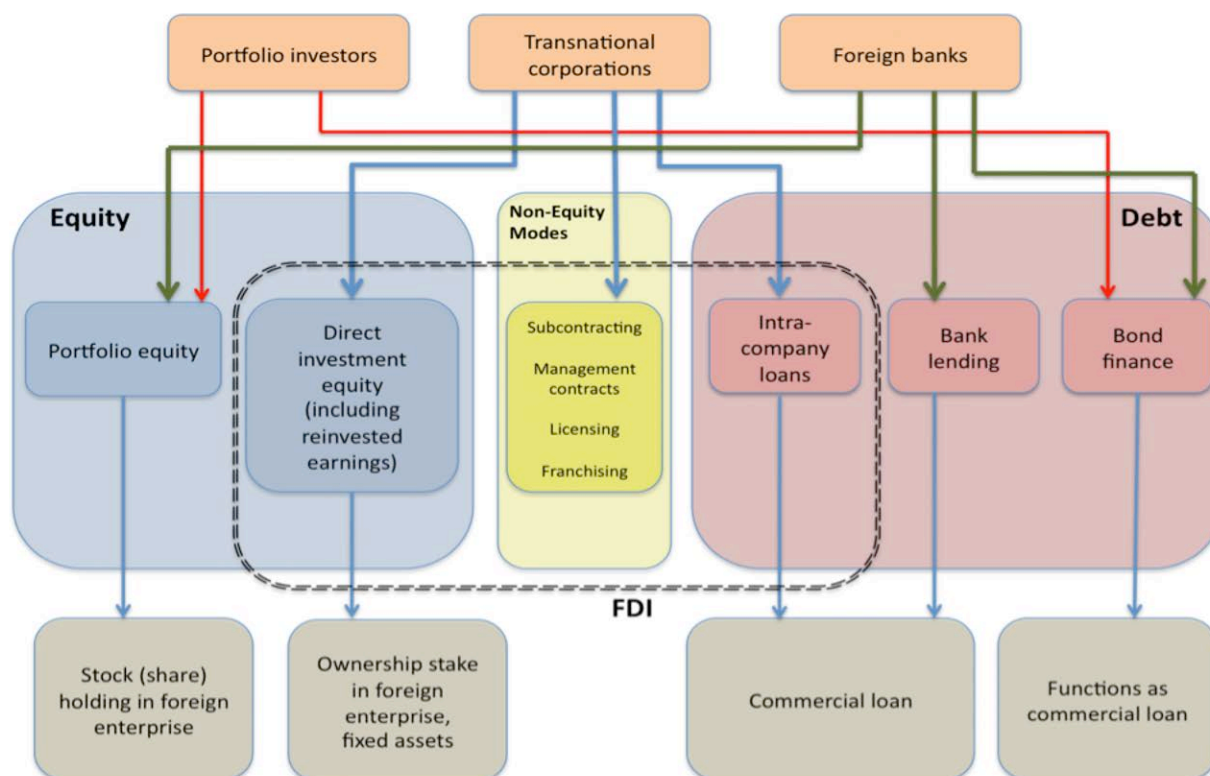
FDI is typically described as being more stable than other kinds of capital flows to developing countries because direct investment, usually by multinational companies, is undertaken with a longer-term intention than most portfolio investments or lending (UNCTAD 2006).

The major components of private debt flows outside the intra-company transfers included in FDI are international bank lending and bond finance. International lending is made up of loans provided to parties resident in a different country from where the bank is based. These are divided into “cross border positions – for example, credits granted by the head office of a Spanish bank to a Mexican organisation – and (ii) local positions, managed, for example, by a Mexican branch of a Spanish bank” (Rodríguez and Santiso 2007, p.16). Bond finance, which can be raised by companies or governments issuing bonds in capital markets, functions for recipients in the same way as a loan instrument. Where a domestic institution issues bonds to foreign creditors, this results in a transfer of debt finance to the host country. Upon maturity of the bond, typically several years, the investment is repaid, along with any outstanding interest. An advantage of bond finance over commercial loans is that the interest rates tend to be slightly lower, meaning cheaper finance for the recipient.

In some climate finance literature, the term “leveraged finance” has become popular, as in “publicly leveraged private finance”. For the purposes of this paper it is not analytically necessary to distinguish leveraged flows, since these are either equity or debt flows; leveraged equity typically forms part of FDI statistics, while leveraged debt finds its way into international (or domestic) lending statistics.

¹ Over the decade until 2009, intra-company loans accounted for 15 per cent of FDI flows to developing countries. Reinvested earnings (part of direct equity) made up 20 per cent (The World Bank 2009).

² As countries do not always collect data for each of those components, reported data on FDI are not fully comparable across countries. In particular, data on reinvested earnings, the collection of which depends on company surveys, are often unreported by many countries... Other than having an equity stake in an enterprise, there are many other ways in which foreign investors may acquire an effective voice. Those include subcontracting, management contracts, turnkey arrangements, franchising, leasing, licensing and production-sharing. A franchise (a firm to which business is subcontracted) or a company which sells most of its production to a foreign firm through means other than an equity stake are not usually collected, some countries have begun to contemplate doing so. For example, the OECD treats financial leases between direct investors and their branches, subsidiaries or associates as if they were conventional loans; such relationships will therefore be included in its revised definition of FDI.” (<http://www.unctad.org/templates/Page.asp?intItemID=3147&lang=1>)

Figure 1: Private commercial (non-trade) finance flows

According to the World Bank, FDI and portfolio equity make up the largest component of capital flows to developing countries. From 2003 to 2010, FDI inflows to developing countries averaged USD 310 billion a year. Portfolio investment during this time averaged USD 34 billion a year, fluctuating between negative USD 66 billion and USD 198 billion. Other investment flows averaged negative USD 13 billion, fluctuating between negative USD 155 billion and USD 193 billion (IMF 2011).³

In assessing the role of the private sector in supporting adaptation in developing countries, it is important to reflect on whether changes in statistics about international private finance are the result of new financial resources being made available or instead reflect only a change in ownership of existing resources. The extent to which new financial resources for recipients are generated depends on factors such as the “mode of entry”. For portfolio equity, new finance is raised in the initial share float, but trading of stocks between investors does not generate new funds. For FDI equity, “greenfields” investments (i.e. in new or expanded activities) result in new financial resources, whereas mergers and acquisitions of existing activities may not. Similarly, if increases in international bank lending statistics are based on new loans to developing countries, they reflect new resources, but if they are based on mergers or acquisitions of local financial institutions by foreign banks they may not translate into new resources. The original bond issue raises new funds, while the sale of bond certificates between parties does not.

It is also important to realise that private finance flows in both directions, to and from developing countries. Direct investors can reverse FDI flows by calling back inter-company loans, increasing the repatriation of earnings, or outright disinvesting through the sale of equity holdings (The World Bank 2004). This means in some years and countries, private outflows may exceed private inflows. At the

³ Negative figures represent an excess of disinvestments over investments.

aggregate level, this phenomenon is captured in the reporting of FDI flows on a “net” basis.⁴ This variation over time in private flows is discussed further in section 2.1.

1.3 Methodology and data sources

Elements of both equity and debt flows to developing countries are examined in this paper.

Equity flows are examined through FDI data extracted from UNCTAD’s FDI database and published in the *World Investment Report 2011* (UNCTAD 2011), as well as various compilation reports by UNCTAD and the World Bank’s Global Development Finance reports.⁵ A subset of equity – that directed to infrastructure projects – is examined in closer detail by extracting relevant data and literature from the World Bank’s Private Participation in Infrastructure database (2011b).⁶ Both FDI and the PPI will also capture some elements of the various non-equity modes of finance described above, while FDI also includes intra-company debt transfers.

Debt flows to developing countries are indirectly analysed through international bank lending statistics, compiled from the Bank for International Settlements’ (BIS) *Consolidated Foreign Claims of Reporting Banks on Individual Countries* statistical series.⁷ The World Bank (2009) describes the reporting of total foreign claims to the BIS as a key measure of international bank activity in developing countries. However, the BIS’ locational banking statistics data set does not contain information on new lending *flows*, only lending *stock* (i.e. accumulated debt at any point in time). This makes it difficult to assess the distribution of flows because, among other things, flow data is obscured by the presence of reverse debt flows from developing countries. For this analysis, therefore, data is extracted from BIS literature (e.g. Jeanneau and Micu 2002), Organisation for Economic Co-operation and Development (OECD) literature (e.g. Rodríguez and Santiso 2007), and again from various *Global Development Finance* reports.

This paper also, where useful, looks at patterns in the distribution of carbon market flows. The carbon market consists of both formal mechanisms under existing trading schemes – such as the Clean Development Mechanism (CDM) – and informal or voluntary investments. Financial flows are directed at the purchase of GHG emission reduction credits (Certified Emission Reductions, or CERs)

⁴ The OECD explains how to interpret negative values for FDI flows and positions as follows: “Negative values in transactions may indicate disinvestment in assets or discharges of liabilities. In the case of equity, the direct investor may sell all or part of the equity held in the direct investment enterprise to a third party; or the direct investment enterprise may buy back its shares from the direct investor thereby reducing or eliminating its associated liability. If the financial movement is in debt instruments between the direct investor and the direct investment enterprise, it may be due to the advance and redemption of inter-company loans or movements in short term trade credit. Negative reinvested earnings indicate that, for the reference period under review, the dividends paid out by the direct investment enterprise are higher than current income recorded (if that is the decision of the board of managers) or that the direct investment enterprise is operating at a loss” (OECD n.d.). UNCTAD, meanwhile, notes: “FDI flows with a negative sign indicate that at least one of the three components of FDI (equity capital, reinvested earnings or intra-company loans) is negative and not offset by positive amounts of the remaining components. These are instances of reverse investment or disinvestment” (UNCTAD n.d.).

⁵ The UNCTAD Foreign Direct Investment Database provides aggregate data for over 190 countries including information about inward and outward FDI stocks and flows. An annual World Investment Report is produced using the data.

⁶ The PPI database does not report only equity. The database classifies private infrastructure projects in four categories: management and lease contracts; concessions (or management and operation contracts with major private capital commitments); greenfield projects; and divestitures. Management and lease contracts transfer at least partially the operational risk to a private sponsor through contractual obligations. In greenfield projects and divestitures, the operational risk is transferred to a private party through contractual obligations and/or equity ownership in the project. Projects included in the database do not have to be entirely privately owned, financed or operated; some have public participation as well. For projects that involve investments, the database figures reflect total project investments encompassing the shares attributable to both the private and the public parties. In general, private parties have at least a 25 per cent participation in the project contract, except for divestitures which are included with at least 5 per cent of equity owned by private parties. The database does not provide data on funding flows coming as debt from private sources.

⁷ Data compiled by the BIS presents the international loans of private banks and deposit organisations worldwide (Rodríguez and Santiso 2007, p.16).

and can be structured as either equity (FDI) or trade flows (product purchase). The CDM market is highly unlikely to be deemed accountable towards the COP's USD 100 billion commitment for developing country support, given its purpose is to offset emission reduction obligations in developed countries. However, it can still enrich the picture of patterns in private sector behaviour. Data on CDM flows is taken from the UNEP Risoe Centre's CDM pipeline. Voluntary carbon markets are around 1 per cent of the size of regulated markets, and their disaggregated nature makes compiling high-quality data a challenge (Hamilton et al. 2010), so they are not considered here.

1.4 Limitations

The analysis here is primarily intended to raise questions, both for policymakers and for further research, that need to be addressed if the debate about private finance and adaptation is to result in a global financial architecture that meaningfully supports the needs of developing countries. It does not provide a comprehensive analysis of decades of private-sector activity. Instead, it draws on sets of indicative data to bring to light behavioural patterns that should be further analysed.

No assessment has been made in this paper of whether the various private capital flows examined might have resulted in tangible adaptation outcomes for vulnerable communities. There is also no intent to estimate or quantify "private climate finance". Some efforts to do so can be more harmful than helpful if, as at present, they proceed too far ahead of any clear definitions or robust analysis that interrogates private finance with greater nuance than umbrella terms like "Green FDI".

The intent here is rather to highlight broader behavioural patterns among the private sector that could have implications for climate finance delivery, particularly for adaptation (though many of these are equally relevant for mitigation). A further layer of analysis examining tangible outcomes is thus essential, to unpick this coarse data, in order to look at whether private finance may be biased towards some activities and away from others in a way that has implications for the achievement of adaptation benefits. In other words, there is a need for indicators that tell us much more about *how effective* different kinds of investment modes and instruments are in delivering adaptation benefits to recipients in developing countries.

2. PATTERNS IN PRIVATE-SECTOR FINANCE IN DEVELOPING COUNTRIES

This section examines how private capital flows have historically been directed and distributed. It begins by looking at fluctuations in private flows over time. It then examines how equity and debt finance has been distributed between different regions and countries, between different sectors, and between new ("greenfields") and existing activities.

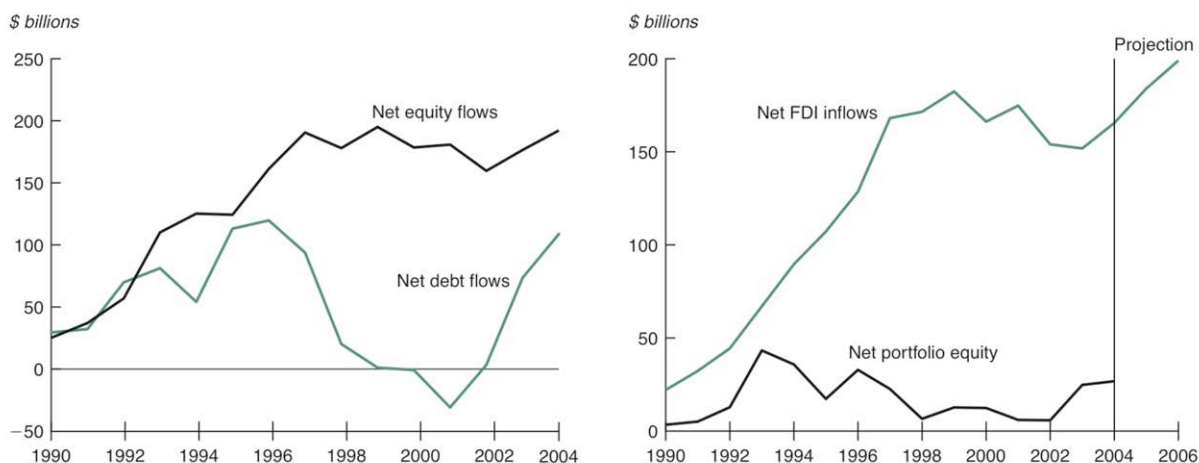
At the aggregate level, when total flows to all developing countries are considered together, FDI has grown quite steadily over the past decade. For the first time, in 2010, more than half of global FDI flows were absorbed by developing and transition economies, which made up 10 of the top 20 host economies for FDI globally (UNCTAD 2011). Over this same period, the behaviour of portfolio equity has been more volatile, though overall has also seen larger flows to developing countries. Private debt flows too have significantly increased over the last decade, including both short-term and medium- to long-term debt, characterised by faster growth in lending from private banks compared to bond finance. Data on net capital inflows to developing countries between 2000 and 2008 are included in Annex 1.

2.1 Temporal fluctuation in private finance flows

Figure 2 shows clearly a difference in volatility – and hence predictability – between equity and debt flows, and between FDI and portfolio investment. While FDI fluctuates from year to year, it appears relatively more stable than either portfolio equity or debt. The longer-term perspective of FDI

investors and the large fixed-cost component (especially with “greenfield” projects) makes it difficult for FDI investors to rapidly disinvest from “large, fixed, illiquid assets”, considerably more so than the sale of stocks or the withdrawal of loans (The World Bank 2009).

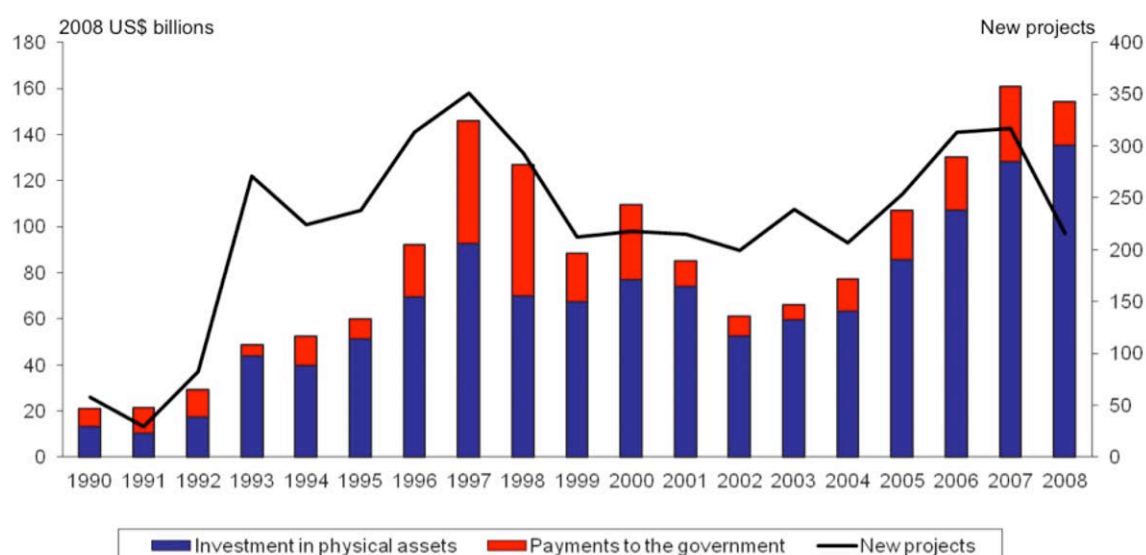
Figure 2: Financial flows to developing countries from the private sector 1990 to 2004 (left) and net equity flows to developing countries 1990 to 2006 (right)



Source: The World Bank (2005).

At the finer-grained level of private-sector engagement with infrastructure investments in developing countries, a similar fluctuating pattern can be seen over the last two decades (see Figure 3). The decline in both investment volumes and project numbers after 1997 suggests the major financial crisis of that year may have taken its toll on investor attitudes towards, or capacity for, developing country market opportunities.

Figure 3: Investment commitments to infrastructure projects with private participation in developing countries, 1990–2008

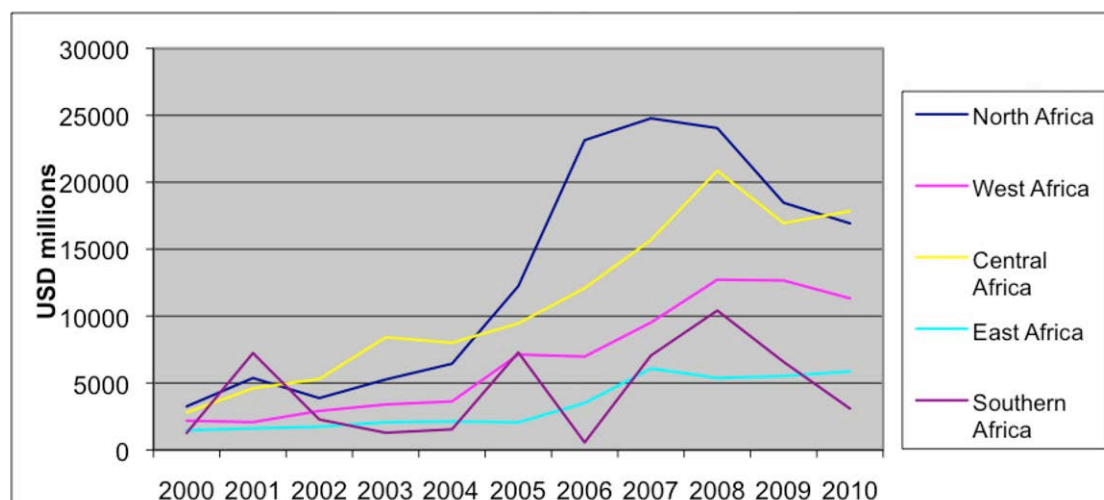


Source: PPI Project Database (The World Bank 2011b).⁸

⁸ Data on investments in infrastructure projects contained in the World Bank’s Private Participation in Infrastructure database are classified as either: investment in physical assets, consisting of the costs of developing or expanding a facility/asset; or payments to the government, which are expenditures on government assets such as state-owned enterprises or rights to

These patterns in aggregated developing-country data disguise even greater variations over time in flows to individual regions or countries. Figure 4 illustrates how FDI inflows to different parts of Africa have fluctuated over the last decade. It also shows that the levels in overall growth in FDI vary considerably between these regions – a point discussed further in section 2.2. Flows to Southern Africa appear particularly unpredictable.

Figure 4: FDI inflows to Africa by region, 2000 to 2010



Source: UNCTADSTAT database (UNCTAD n.d.).

The ability of private flows of both equity and debt to move relatively easily and quickly in and out of developing-country markets means the scale of private capital available to recipients can vary greatly from year to year, particularly at the level of individual countries. Funds can be withdrawn, while domestic investors in developing countries can pursue opportunities abroad – a phenomenon which has recently resulted in significant “South-South” flows of FDI, particularly originating from Asian transnational corporations (TNCs). This variability needs to receive greater consideration in the climate finance discussion because it has implications for what kinds of climate change outcomes might be effectively supported.

It is worth noting that, in a world of globalised capital, major fluctuations in flows are commonly related to external events and conditions rather than domestic factors in individual countries. During the 1990s, there was a huge rise in lending to Asia, which Jeanneau and Micu (2002) suggest was probably partly due to “interest rate arbitrage” by international banks – in other words, lending is part of a wider risk portfolio, and lending practices will vary as other parts of the portfolio vary. The global financial crisis in 2008 severely reduced private capital flows to developing countries, with net portfolio equity falling by around 90 per cent and net private debt flows falling by almost 80 per cent (The World Bank 2009). In the case of debt flows, major financial shocks “affect lending by international banks to emerging-market borrowers through three major channels: balance-sheet effects, changes in interbank liquidity, and changes in lending standards” (The World Bank 2009, p.62). In addition to raising the cost of capital for lenders, the 2008 financial crisis also resulted in withdrawals of equity from developing countries (Cali et al. 2008).

provide services in a specific area or to use radio spectrum (these include divestiture revenues, license fees, and canon payments). More information can be found at <http://ppi.worldbank.org/>.

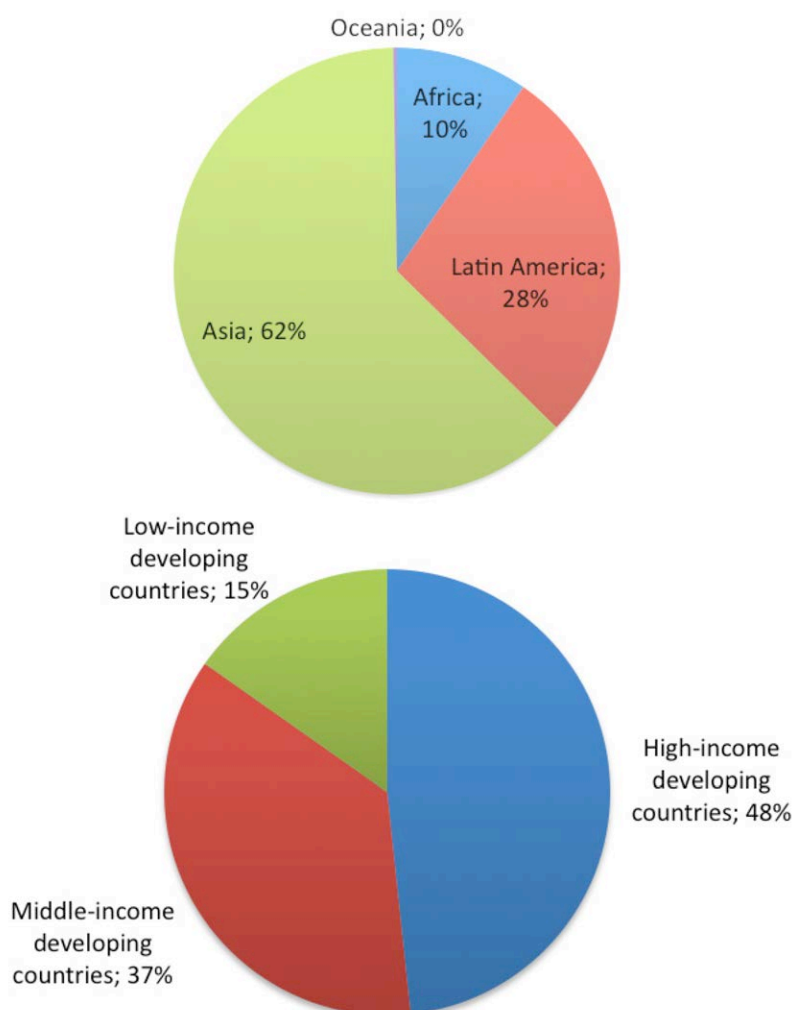
2.2 Distribution between regions and countries

From a climate policy perspective, geographic distribution of resources to take action is arguably far more critical to examine for adaptation objectives than for mitigation, since in the former the location of activities matters.

Foreign direct investment

Although FDI to developing countries as a whole has generally increased in recent years, there are significant regional differences in the distribution of these flows. At the coarse regional level, Figure 5 shows that nearly two-thirds of 2010 FDI inflows to developing countries were directed to Asia. Between 2001 and 2006 Africa as a whole received an annual average of just over 8 per cent of total FDI inflows to developing countries, or equivalent to an annual average of around 2.3 per cent of global FDI flows (UNCTAD 2008). In 2010 these figures were only slightly higher, at 10 per cent of FDI to developing countries and 4.4 per cent of global FDI (UNCTAD 2011). These figures are for all FDI inflows, including “South-South” flows. The figure also shows that approximately half of total flows were directed to high-income developing countries, while only 15% to low-income countries. Less than a quarter of the FDI to low-income countries went to countries that are classified by the IMF as heavily-indebted poor countries.

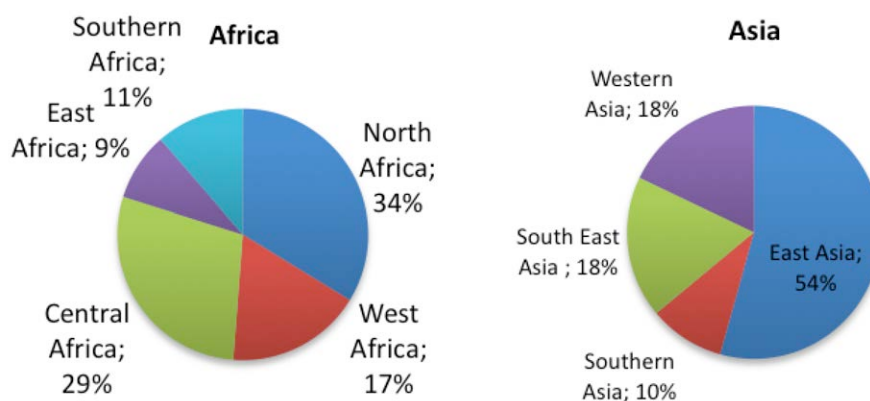
Figure 5: Distribution of 2010 inward FDI flows to developing countries, by region and income



Source: Data from UNCTADSTAT (UNCTAD n.d.).

The distribution patterns within regions are also uneven. Figure 6 illustrates the share of FDI inflows directed to different parts of Africa and Asia and highlights major differences between sub-regions. For instance, North Africa receives around four times as much FDI as East Africa. The presence of China in East Asia means this region dominates flows. FDI inflows to South East Asian countries more than doubled in 2010, and those to East Asia rose by around 17 per cent, while at the same time inflows to South Asia declined by a quarter (UNCTAD 2011).

Figure 6: Average annual distribution of FDI inflows by sub-region, 2000 to 2010



Source: Data from UNCTADSTAT (UNCTAD n.d.).

The developing country beneficiaries of FDI have generally been major emerging economies in East and Southeast Asia and Latin America. Between 2000 and 2002, just five countries – China, Brazil, Mexico, Czech Republic and Singapore – accounted for almost three-quarters of all developing country FDI inflows (Braunstein 2006). By 2010, the top developing country recipients of FDI were (in order) China, Brazil, Russia, Singapore and India (which was second in 2009), followed by Mexico, Chile and Indonesia. Inflows to China were more than twice those of second-ranked Brazil and nearly an order of magnitude greater than those to Chile or Indonesia (UNCTAD 2011).

Although aggregate statistics point to a boom in FDI to developing countries as a whole, inflows to the 48 Least Developed Countries (LDCs)⁹ declined overall in 2010, as did flows to Africa, landlocked developing countries (LLDCs), and Small Island Developing States (SIDS). The former is described by UNCTAD (2011) as “a matter of grave concern”.

What private investment does reach LDCs is also unevenly distributed. Inflows to Africa have been directed heavily towards the primary sector, in pursuit of vast natural resources, and to a lesser extent services sectors, particularly as a result of various privatisation programmes.¹⁰ In the period 2000 to 2006, almost a third of FDI inflows to Africa went to the group of six countries that are deemed major petroleum exporters;¹¹ mining activities are also a common focus for investors in Africa (UNCTAD 2008). Further discussion of sectoral preferences among private investors is left for section 2.3, but it is clear that investors are attracted to some countries more than to others, and that in the case of LDCs, natural resources are often the draw.

There is a clear long-term pattern of middle-income countries attracting a much greater volume of net FDI flows compared to low-income countries. Almost all of the increase in FDI inflows to developing countries witnessed in 2008 occurred in middle-income countries, notably Russia, India, Brazil, and

⁹ The group of 48 Least Developed Countries presently includes 33 from Africa, 14 from Asia, and 1 from Latin America and the Caribbean.

¹⁰ The capital-intensive nature of many resource projects helps boost the significance of these in FDI data. If instead number of projects is used as the metric, around 40 per cent of investments were in the form of “greenfield” projects in the manufacturing sector and 16 per cent in services (UNCTAD 2011).

¹¹ Algeria, Angola, Congo, Gabon, Libya and Nigeria (UNCTAD 2008).

China (The World Bank 2009). This is a consistent pattern over time, as Table 1 indicates. On average between 1997 and 2002, middle-income countries averaged just over 90 per cent of the total FDI inflows to developing countries, while the LDC fraction averaged less than 3 per cent. For reference, LDCs make up around 15 per cent of the total population in developing countries and an even larger fraction of poor people, for whom external financial support for adaptation is an imperative.

Table 1: Net FDI inflows to developing countries, by income group, 1997-2002 (USD billions)

Income grouping	1997	1998	1999	2000	2001	2002
Middle income countries	152	162	171	156	164	134
Low-income countries	19	14	11	6	11	13
Least developed countries	3	4	6	4	6	5

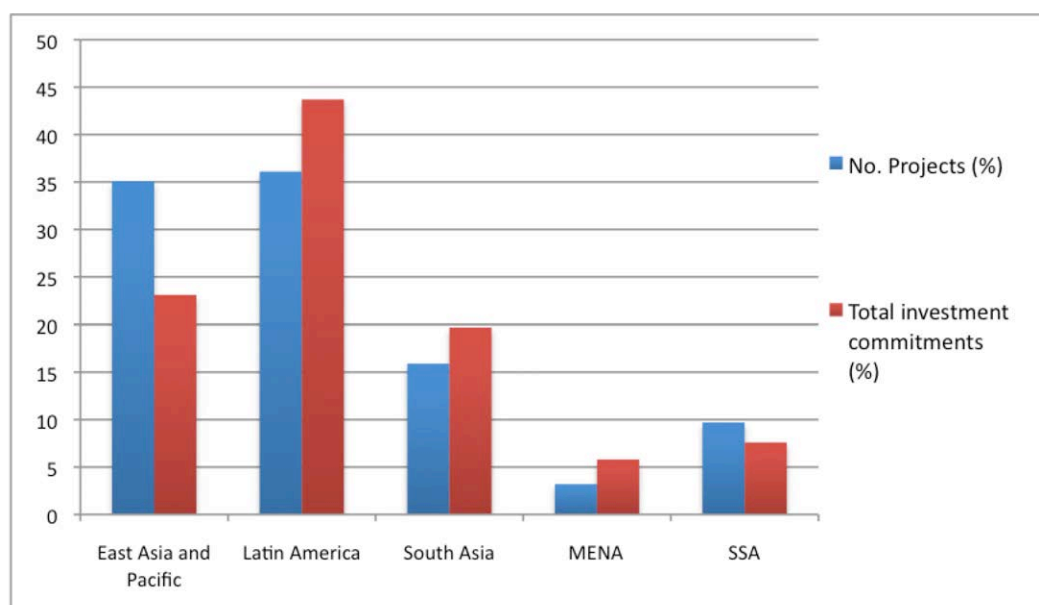
Source: Data from World Bank (2004).

The major difficulty LDCs have in attracting private finance is underscored by the fact that official development assistance consistently exceeds FDI across the LDCs (UNCTAD, 2006).¹² Even within the LDCs there is a substantial concentration of flows, with over 80 per cent of flows in 2010 going to resource rich countries in Africa (UNCTAD 2011).

Private participation in infrastructure

The regional pattern over two decades of data on private participation in infrastructure projects in the energy, telecommunications, transport and water sectors follows much the same pattern as FDI more generally. Figure 7 shows that, in both total investment value and project numbers, Latin America and East Asia dominate, while Africa has consistently seen the lowest share of private engagement.

Figure 7: Regional distribution of private participation in infrastructure in developing countries 1990-2008, per cent of total number of projects (left) and total investment value (right)



Source: PPI Project Database (The World Bank 2011b).

¹² According to UNCTAD (2006), average annual flows of bilateral ODA over the decade 1991-2000 exceeded FDI inflows in 45 out of 49 countries classified as LDCs at that time.

There are observable variations in the regional distribution pattern when individual sectors are disaggregated from this cumulative data set; these are picked up in section 2.3.

A more detailed breakdown of private capital flows by type is provided in the World Bank's *Global Development Report* (The World Bank 2009). Drawing on this data, the table below highlights regional differences not only in net private flows but also in the relative significance of different equity components (FDI equity and portfolio equity) and debt flows. Particular sub-categories of debt are highlighted in Table 2, including medium- to long-term lending and lending from private banks since these are particularly interesting categories from a climate adaptation perspective.

Table 2: Private capital flows to developing countries 2007 by region (Figures in USD billions)

	Middle East and North Africa	Europe and Central Asia	East Asia and Pacific	Latin America and Caribbean	Sub-Saharan Africa	South Asia
Net private inflows	21.0	471.4	281.2	215.9	55.5	112.5
Net equity inflows	22.1	180.8	210.5	137.1	42.1	66.0
Net FDI	24.2	154.4	175.3	107.5	28.6	29.9
Net portfolio equity	-2.1	26.4	35.2	29.6	13.5	36.1
Net debt flows from private creditors	-1.1	290.6	70.7	78.8	13.4	46.5
Net M-L term debt flows*	-1.8	189.3	28.1	45.7	7.9	27.2
Banks	-0.5	132.1	26.2	37.0	1.9	17.7

* Includes bonds, banks and other debt flows. Source: World Bank (2009).

This table presents a snapshot for one year only (aggregate statistics for 2001 to 2007 are included in Annex 1), and given the year-to-year variation described in section 2.1, we should be cautious over-interpreting the data. Nonetheless, a number of interesting observations about regional distribution can be made:

- Africa appears to see the lowest portion of debt finance. In Sub-Saharan Africa it makes up less than a quarter of net private inflows, while the Middle East and North Africa region for this year reports debt outflows in excess of inflows.
- In South Asia, portfolio equity is larger than FDI for this year.
- Europe and Central Asia receive a greater portion of finance as debt than other regions.

If these patterns extend over time, they have consequences for recipient countries. FDI equity, portfolio equity and debt have different characteristics, of different use to recipients. The relative accessibility of each may thus have important implications for what kinds of activities can be supported. Lending is likely to be an important tool for much climate change adaptation, since it is more flexible than equity in terms of the activities it can support (Atteridge 2010).¹³

The analysis in section 2.3 makes this all the more relevant, since it becomes clear that some economic sectors which are important from a climate adaptation perspective don't seem to attract

¹³ Lending can be used to finance activities which don't necessarily have a commercially attractive revenue stream within the project but which may generate public benefits, as long as the borrower has access to finance for repayments via other sources.

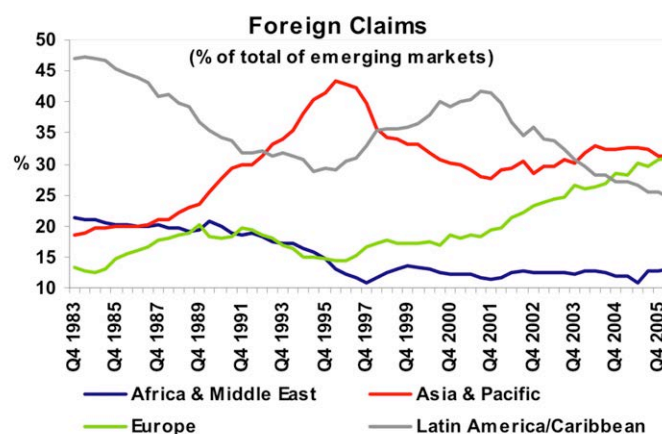
much private equity interest, at least in particular regions or particular countries. This means they will probably be more reliant on lending to pursue adaptation measures. If lending is a scarce resource, as it appears to be in much of Africa, then private resources for adaptation may be difficult to find.

International bank lending

As with FDI flows, Latin America and Asia have generally received much greater flows of non-FDI debt finance than other parts of the developing world, and regional flows tend to be heavily concentrated in certain countries. The high Latin American share is due largely to Mexico and Brazil, which together accounted for more than 70 per cent of the region's total international bank loans in 2006 (BIS data, in Rodríguez and Santiso 2007, Appendix 1) and are the individual emerging countries that have received most loan finance over the past two decades. Mexico received around 10.5 per cent of total foreign lending in 2005, equivalent to total loans directed to all of Africa and the Middle East in the same year. South Korea is the dominant figure in Asia, receiving almost double the lending volume of the next highest recipient, China (Rodríguez and Santiso 2007).

Africa has struggled most in accessing debt finance, with the region's growth in loans below growth to other developing countries (Rodríguez and Santiso 2007; Jeanneau and Micu 2002). During the 1990s, credit to the private sector represented only 21 per cent of GDP in Sub-Saharan Africa, which is low compared to other regions. This echoes the earlier observation that net private finance to Africa consists of a lower portion of debt flows than other regions. Within Africa, South Africa accounted for more than a quarter of all loan finance in 2006 (BIS data, in Rodríguez and Santiso 2007, Appendix 1).

Figure 8: Foreign claims on emerging countries (% of total emerging markets) 1983 to 2005



Source: Rodríguez and Santiso (2007), based on 2006 BIS data.

Jeanneau and Micu (2002) describe potential “push” and “pull” factors that influence international lending patterns. Among these are two worth highlighting again here. The first is the influence of “trade financing” on expansion of lending. The argument runs that trade patterns tend to affect the way lending is distributed, since trade relations provide deeper intelligence among lenders about investment conditions among borrowing countries. The second is that it appears patterns of bank lending follow FDI, at least to some extent. As FDI from European companies grows, so too do European bank lending flows to support this expansion. If indeed equity and debt travel together, this would create a further concentrating effect on private flows. The data in Table 2 shows, however, that this is not entirely the case, or at least that the relationship is more nuanced than this statement indicates, since the ratio of FDI to debt flows differs in each region.

It should be noted that some observed changes in debt flows to developing countries have been the result of a recent period of acquisitions of local banks by international banks. Although this phenomenon affects the way debt flows are accounted – it appears as an increase in international lending figures – there is no certainty that this transaction actually increases credit resources for local borrowers.

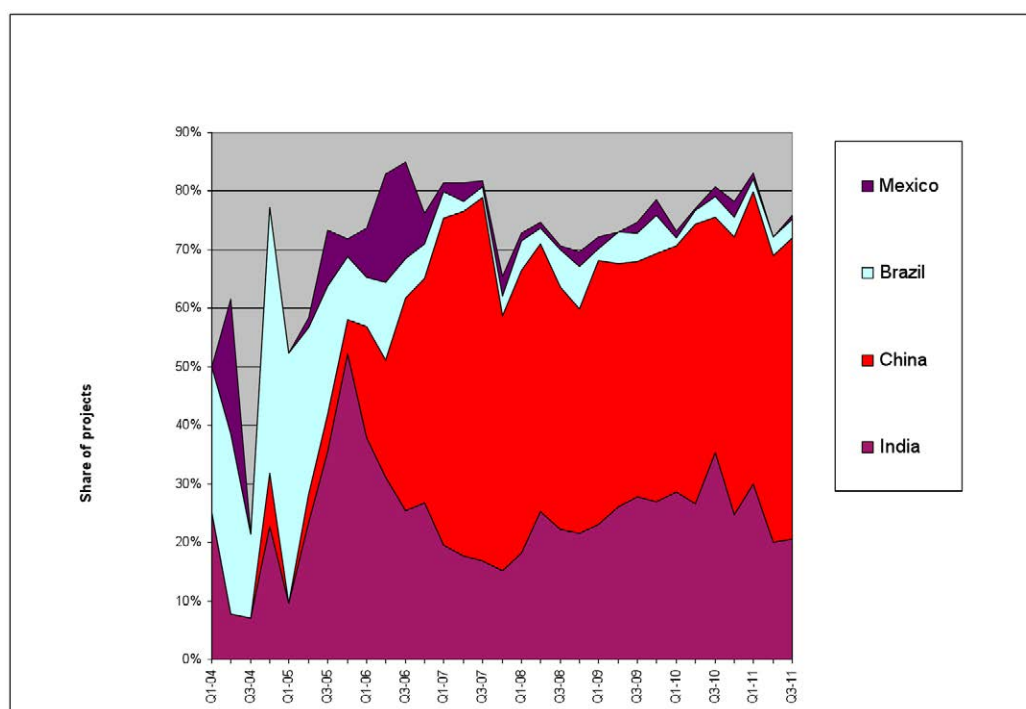
Concentration among lenders

Apart from a concentration among developing country recipients of lending, there is also a regional concentration among lenders themselves. Rodríguez and Santiso (2007) find that UK and French banks are the most active lenders in Africa; Spanish and US banks have the strongest presence in Latin America; while in Asia the dominant private lenders are UK and the US banks. Geographic proximity, a common language and former colonial relations are cited as features strongly influencing how lending is directed, common among all financing economies. It is worth noting that French, and to a lesser extent German, banks play a key credit role to the 67 countries that receive no lending from the United States, together providing around 45 per cent of the finance to these countries. If this pattern is predictive of private climate-related investments – and there is no reason to think it would not be – it means some countries' adaptation efforts may be dependent on very few lending channels.

Carbon markets

A similarly concentrated pattern can be seen in CDM market flows. Figure 9 illustrates that two countries – India and China – have since about 2006 typically made up between 60-80 per cent of all CDM projects (in number). In total, just over 81 per cent of all CDM projects (by number) have taken place in Asia. The remainder consist of around 14 per cent in Latin America, 2.6 per cent in Africa, and just over 1 per cent in each of the Middle East, and Europe and Central Asia. As of November 2011, more than half of the LDCs had not seen a single CDM project (UNEP Risoe Centre 2011).

Figure 9: All CDM Projects in the Pipeline in Brazil + Mexico + India + China as a fraction of all projects



Source: CDM/JI Pipeline (UNEP Risoe Centre 2011).

2.3 Sectoral distribution

It may be that all sectors of the economy need to consider climate change impacts and might require adaptive measures to reduce future exposure; however, adaptation to climate change will most likely require concentrated investments in sectors that are particularly vulnerable and/or upon which many livelihoods or much economic production depends. In developing countries, this will commonly include a focus on water resources, in particular the agriculture sector, a statement borne out by the fact that the National Adaptation Programmes of Action (NAPAs) prepared by LDCs have tended to prioritise near-term action in these sectors (see UNFCCC 2010). Primary sector activities such as agriculture, fisheries and forestry provide the direct livelihood basis for many people in developing countries, especially when production is on a small scale. At the same time, some tertiary sectors of the economy, such as telecommunications and energy, might play important roles in delivering services that help communities reduce specific risks or, more generally, buffer their livelihoods and reduce vulnerability to deteriorating environmental or social conditions.

It is therefore important to be able to see whether there are discernable patterns in how different kinds of private finance behave towards different economic sectors. The sectoral categorisation used by the UNFCCC to summarise the adaptation priorities of LDCs provides a sense of the sectors deemed important from an adaptation perspective. These include: food security, including agriculture, livestock, fisheries and other livelihood sources; coastal zones and marine ecosystems; early warning and disaster management; education and capacity building; energy; health; infrastructure; insurance; terrestrial ecosystems, including land management, forest ecosystems, wetlands/lakes, natural sites; tourism; water resources; and cross-sectoral projects (UNFCCC 2010).

As it turns out, obtaining meaningful sectoral data on private flows is difficult. UNCTAD's FDI database does not provide easy access to sectoral information, although UNCTAD synthesis reports tease out some interesting patterns. Lending statistics in the BIS database are not presented by sector. For general FDI and bank lending, therefore, secondary sources are relied upon for this coarse review. Collated sectoral data on portfolio investments is not available, and analysis of these would instead require interrogation of individual institutions' portfolios over time (to the extent that such data is publicly available, in annual reports and the like).

Foreign direct investment

At the regional level, FDI to Africa is driven by the exploitation of natural resources, with oil and mining featuring heavily (UNCTAD 2011). In addition, inflows of FDI to tertiary (service) industries in many African countries rose during the first half of the 2000s as a result of various national privatisation schemes (UNCTAD 2008). Based on data presented for 12 African countries (and 19 country/year combinations) during the period 1995 to 2006 (UNCTAD 2008), the following observations are made:

- The combined *mining, quarrying and petroleum* sectors were the number one target for FDI inflows in six of the 19 data sets, across six different countries (Egypt, Madagascar, Mozambique, Nigeria, Tunisia, Tanzania). It was also probably the largest target in a further two data sets, (including Mauritania), though it cannot be confirmed because some portion of total flows remains unspecified in these cases.
- Secondary industries were the main FDI target in two data sets, namely *wood products* and *food and beverages* respectively.
- The *trade* sector was the main FDI beneficiary in two data sets.
- The *finance* sector was the main beneficiary in two data sets.
- The *transport, storage and communications* sector (unfortunately mixed together as an analytical unit) was the main beneficiary in three data sets.

- The *agriculture, hunting, fisheries and forestry* sector (again, unfortunately mixed together) was possibly the main FDI target in one data set (Zambia 1995) where it accounted for 26.4 per cent of total FDI inflows, though in this case the recipients for a large portion of remaining inflows are unspecified. After Zambia, the next highest portions of FDI inflows to this sector were 10.9 per cent (Zimbabwe 1995), 10.8 per cent (Ethiopia 2000) and 10.2 per cent (Tanzania). In all other cases the proportion directed to *agriculture, hunting, fisheries and forestry* was considerably lower.
- There are no investments reported in *education*,¹⁴ and almost none in *health and social services*. For the latter, the only data entry is for Tanzania, where it accounted for 0.1 per cent of total FDI inflows in 1999 and 0.2 per cent in 2001.

During 2005 to 2007, FDI inflows to *agriculture, forestry and fisheries* in developing economies totalled USD 3 billion, which makes up only 0.8 per cent of total FDI inflows to developing countries (UNCTAD 2009, Table III.7). Furthermore, at the level of aggregate statistics, there are still many uncertainties about where the finance actually ends up, and what kinds of activities it is supporting. Therefore, when looking at whether flows to these sectors might benefit local communities in a way that could foster adaptation benefits (among other livelihood benefits), it is necessary to further scrutinise the data closely. Are investments directed towards small-scale activities, as opposed to large, industrial-scale production? Are investments directed to activities that might increase food security, as opposed to increase commodity exports?

As a general pattern, foreign TNCs involved in agriculture in developing countries tend to engage with large-scale agricultural production mainly for export commodities, both for food and non-food crops such as biofuels (UNCTAD 2009). Hence, FDI seems likely to be focused here rather than at the scale of small subsistence farming communities. The importance of FDI apparently varies by commodity, being of low significance for staple food items such as rice but of greater importance for certain cash crops such as cut flowers and sugar cane (UNCTAD 2009).

The uncertainty about whether FDI directed to the agriculture sector in developing countries is beneficial for local people, or if instead it may actually be exacerbating vulnerability, is underscored by UNCTAD (2009):

There are attendant risks to entry by TNCs into developing-country agriculture. These risks include the possible disruption of traditional farming and loss of livelihood for subsistence farmers or other disadvantaged groups such as indigenous peoples; the concentration of the industry into fewer hands, with the danger of market power being exercised against farmers and consumers; potential environmental degradation, for instance arising from the introduction of water-hungry “industrial” methods in agriculture; and the wider dangers of dependence on foreign investors, including concerns about “land grabbing” leading to neo-colonial relations between countries producing and consuming agricultural produce. (p.94)

In a list of the 20 largest “greenfield” FDI projects in LDCs during 2002 to 2004, eight were in the petroleum sector, five in the metals/mining sector, one in the chemicals sector, and the remaining three were also related to the energy sector (including natural or liquefied gas). Perhaps this is not surprising, given the capital-intensive nature of projects in these sectors.

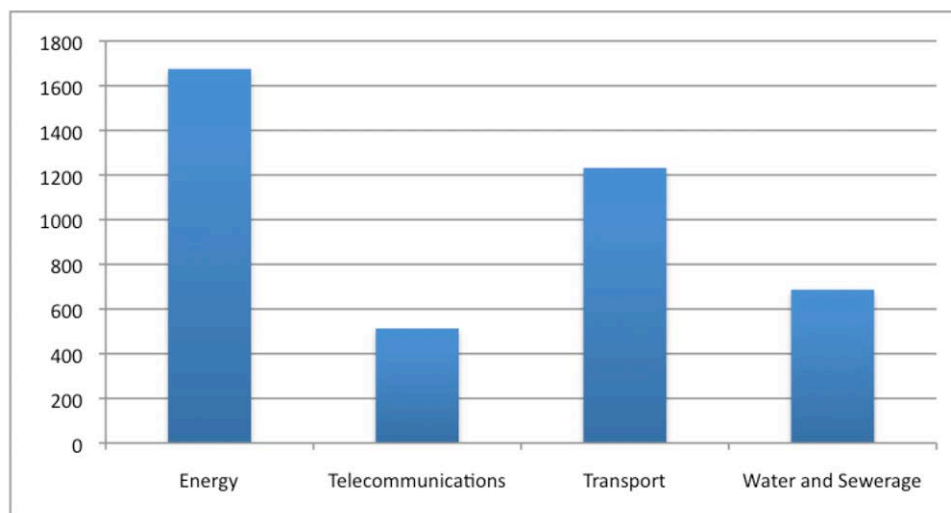
Infrastructure

The World Bank’s PPI database breaks down infrastructure activities into the energy, telecommunications, transport, and water and sewerage sectors. Figure 10 shows that at the global

¹⁴ FDI inflow data in Table 3 of UNCTAD (2008) does not report education as a sector, however FDI stock data in Table 2 does. There are no entries for education.

scale, 41 per cent of total projects were in the energy sector and 30 per cent in transport, both sectors commonly associated with GHG mitigation objectives. The water and telecommunications sectors, which have arguably a greater relevance for adaptation objectives, made up only 17 per cent and 12 per cent of projects, respectively.

Figure 10: Private sector participation in infrastructure, number of projects by sector 1990-2010



Source: PPI Project Database (The World Bank 2011b).

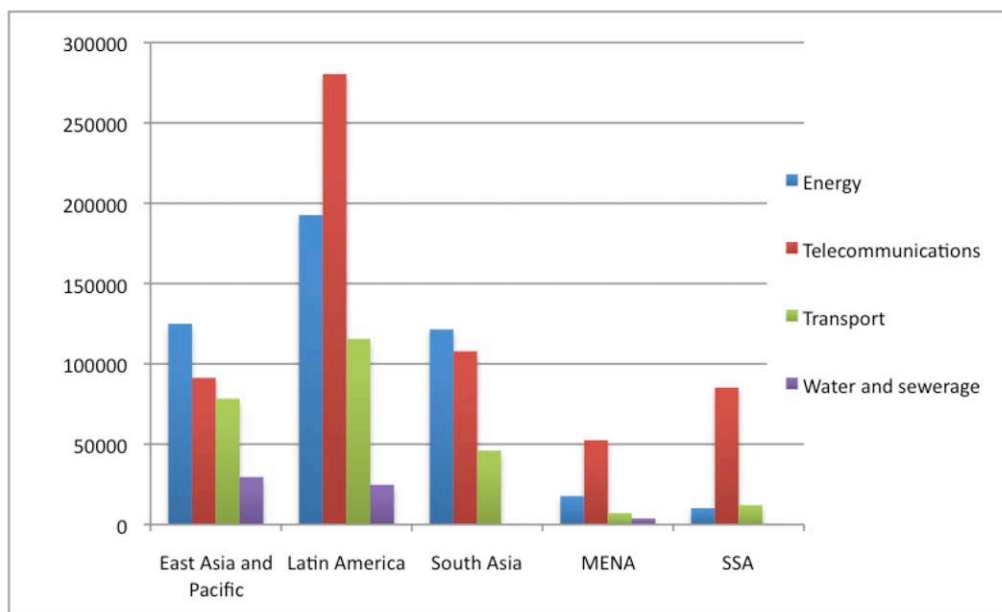
The picture gained from these aggregate statistics is distorted by a high concentration of projects in few countries, particularly for the water sector. Further scrutiny of the data, as in Figure 11, reveals a roughly similar regional distribution pattern for the energy, water, and to some extent transport sectors, characterised by a heavy concentration of investment in East Asia and Latin America, a relatively lower portion in South Asia (energy projects only), and very little in Sub-Saharan Africa or the Middle East and Northern Africa.

This is most startling for water projects. Only a tiny fraction of private engagement in water infrastructure is located in low-income countries, the vast majority being directed to China and to upper middle-income countries (see Figure 12). If China is removed from the data, investments in the water sector in developing countries actually peaked around 1999 to 2001 (in terms of number of projects). If the water sector is further disaggregated into different types of activities, it becomes apparent that private investment in *water treatment* over the 1990 to 2008 period was almost exclusively focused on the East Asia region, again predominantly China.

In the energy sector, India, Brazil, Russia and Turkey accounted for 77 per cent of total infrastructure investments in developing countries in 2010 and 58 per cent of new (greenfields) projects (The World Bank 2011a).

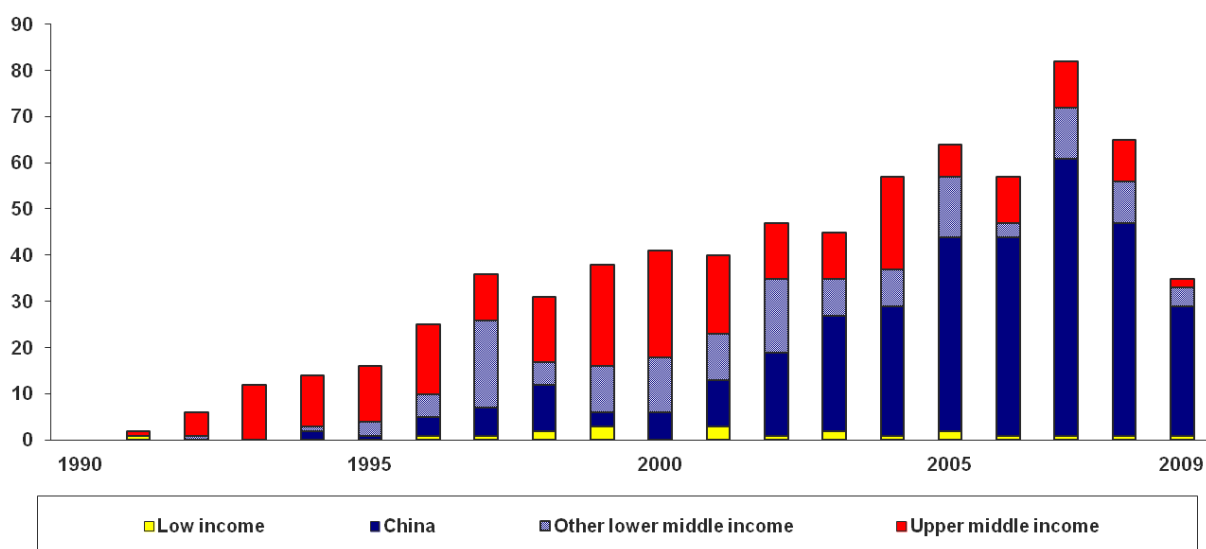
The regional distribution pattern for the telecommunications sector differs in that Africa, in particular Sub-Saharan Africa, has during the last two decades attracted a greater number of projects than any other region, although total investment flows still amount to less than all other regions except the Middle East and North Africa. This is an interesting anomaly, given the difficulty Africa seems to have experienced in attracting infrastructure investment in other tertiary sectors.

Figure 11: Regional distribution of private participation in the energy, telecommunications, transport and water sectors, by investment value, 1990-2008



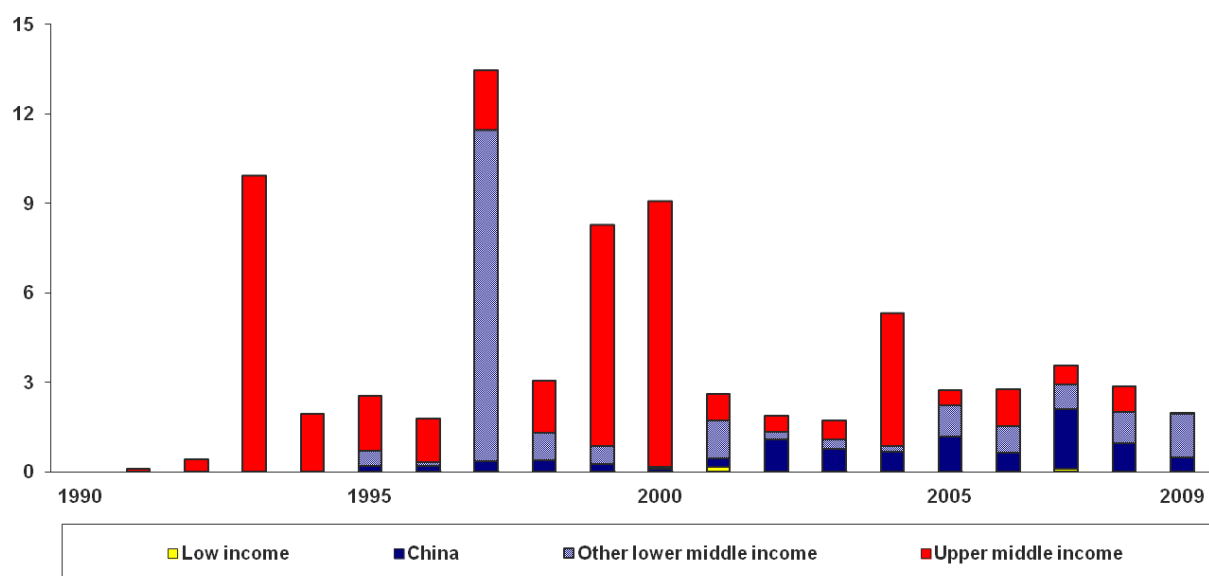
Source: PPI Project Database (The World Bank 2011b).

Figure 12a: Private participation in water sector projects in developing countries 1990-2009, by country income group, 1990–2008, by number of projects



Source: PPI Project Database (The World Bank 2011b).

Figure 12b: Private participation in water sector projects in developing countries 1990-2009, by country income group, 1990–2008, by total investments



Source: PPI Project Database (The World Bank 2011b).

2.4 Greenfield investments versus mergers and acquisitions

Finance has different “modes of entry”. One common way of distinguishing flows is between “greenfields” investments, which generally refers to investments in new activities or infrastructure, and mergers and acquisitions (M&A), which refers to investments in existing activities or infrastructure. This distinction between greenfields investments and M&As is important to examine because they imply different outcomes for people in developing countries in terms of the additional benefit generated by the flow of finance. In other words, the *mode of investment* in an adaptation-relevant activity or sector has a tangible impact on the actual adaptation outcomes for communities.

M&As represent a transfer of ownership for services that are already being provided, so if there is any adaptation benefit, it perhaps can only be quantified as any increase in efficiency or decrease in costs for communities that arise from the transfer. By comparison, greenfields projects involve the introduction of new activities or services, and – all else being equal – could be reasonably expected in many cases to deliver much greater adaptation benefits. The same is true for mitigation investments; greenfields activities can establish new clean energy infrastructure, while mergers or acquisitions of existing projects could have negligible impacts on GHG emissions (Stadelmann et al. 2011). How these differences might be distinguished in an accounting framework for climate finance therefore requires some consideration.

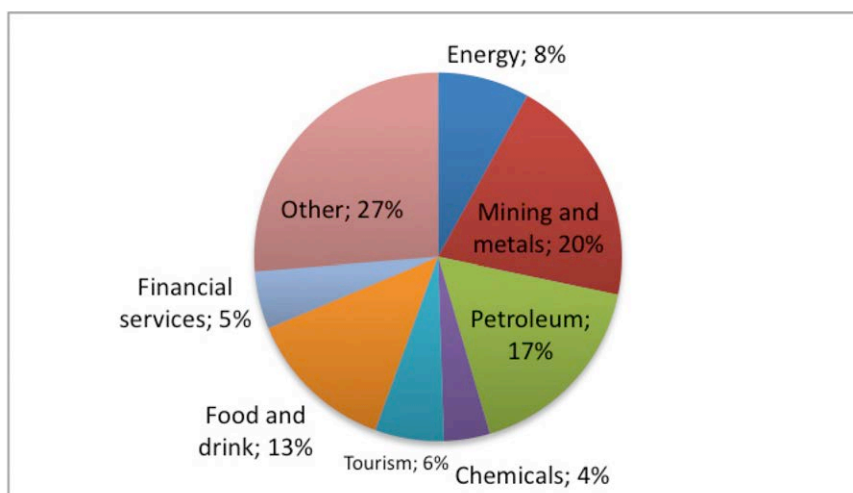
Foreign direct investment

According to UNCTAD (2011), companies to some extent tend to consider the two modes of market entry as alternative options, so it is not surprising to see differing trends over time between the two. Globally in 2010 for instance, greenfield investment declined, while cross-border M&As rose. Despite this, since the global crisis of 2008, the total project value of greenfield investments, globally, has been much higher than for cross-border M&As (p.10).

A compilation of data from UNCTAD (2006) on greenfields FDI during 2002 to 2004 in LDCs prompts some interesting observations. A total of 99 projects were announced (not necessarily implemented) during this three year period, spread across 26 countries. Figure 13 shows their sectoral

distribution. The “energy” projects include natural and liquefied gas activities; “food and drink” often involved soft drink companies; the “financial services” component was limited to investments in one country (Afghanistan), and the 26 per cent designated “other” were typically some form of secondary manufacturing or telecommunications. Twenty-two LDCs saw no greenfields investment in this three-year period.

Figure 13: Sectoral distribution of greenfields FDI within the LDCs, 2002 to 2004



Source: Data from UNCTAD (2006).

These figures represent all FDI, not just the portion sourced from industrialised countries. The contribution from investors in other developing countries (“South-South” flows) can be significant. For example, of the nine greenfields projects in Bangladesh between 2002 and 2004, only four are sourced from OECD countries; the others came from India, the United Arab Emirates and Malaysia.

Infrastructure

Among investors in infrastructure in developing countries, a relatively high portion of *telecommunications* projects are greenfields (around 74 per cent by number, or 59 per cent by investment volume). This compares with the *energy* sector, in which greenfields activities made up 68 per cent of projects (and 63 per cent by overall investment), 32 per cent of projects (and 37 per cent overall investment) in the *transport* sector, and around 42 per cent of projects (23 per cent of overall investment) in the *water and sewerage* sector.

Within each sector the patterns vary according to the type of activity. Only seven of the 91 *water utility* projects in developing countries between 2004 to 2008 were greenfields projects, although a significantly larger number involved some element of “rehabilitation”, and it is possible this generated important “new” benefits. By comparison, a high portion of investments in *water treatment* appear to have been greenfields activities.

It has already been mentioned that Africa seems to have difficulty attracting private finance to the water sector generally. Compounding this is the fact that of the 26 *water and sewerage sector* projects reported during 1990 to 2008 in Sub-Saharan Africa, only two have been greenfields projects (The World Bank 2011b).

3. IMPLICATIONS FOR DESIGNING INTERNATIONAL FLOWS OF CLIMATE FINANCE

The historical data examined here raises some very significant questions about the assumption that private finance can be relied upon to deliver a large part of the global financial package intended to help poor and vulnerable populations tackle climate change.

First, it identifies significant gaps in the distribution of private flows which, if not transformed, could mean much of the developing world misses out on desperately needed financial support.

Second, it makes apparent several other issues pertinent to private financial flows that require consideration during the process of devising an international climate finance framework, in particular:

- a number of accounting challenges, which are important in the context of intentions to count some private finance towards international commitments;
- a need to consider the varied quality of different kinds of private flows, vis-à-vis the achievement of climate-relevant objectives in developing countries; and
- the nature of the task for public finance to leverage resources and fill gaps, as well as doubts about the ability of public finance to meet these challenges.

3.1 Gaps in financial delivery

The data on FDI, private involvement in infrastructure and lending reveals gaps in the way finance is distributed to different countries, sectors, demographic groups and scales of project.

Private flows are not predictable

At both global and regional scales, the level of investment by private actors fluctuates considerably over time. Generally, FDI appears more stable than portfolio equity or debt flows, which can shift quickly. The predictability of private finance might therefore be quite low, especially in countries and sectors that are not preferential investment hubs. This unpredictability is exacerbated by the fact that private flows move in two directions – equity investment can be followed by disinvestment, for instance.

Private flows are not evenly spread across the developing world

The regional concentration of finance in a small number of emerging economies and resource-rich developing countries is problematic, since many of the world's poorest countries are among those most in need of financial support for adaptation.

The Least Developed Countries host very little private-sector activity, and even low- to middle-income countries struggle to attract significant flows. LDCs, which make up around 12 per cent of the world's population and 15 per cent of developing country population (UNFPA 2011), on average received around 3 per cent of total FDI inflows to developing countries between 1997 and 2002. Private finance instead concentrates in a relatively small number of countries, usually larger emerging economies or those from which abundant natural resources can be extracted.

Private flows head to some sectors but not others

The ability to attract private capital to sectors that are vulnerable to climate change and that are priorities from an adaptation perspective is important to examine. Water and agriculture, for instance, will be closely implicated in developing-country efforts to adapt to climate change.

Private engagement with infrastructure in developing countries has been significantly more focused in sectors relevant for mitigation, namely energy and transport, than adaptation sectors such as water and telecommunications. Outside of China and Latin America, there have been very few investments in the water sector at all. Harris (2003) attributes this difficulty in attracting private players in some

tertiary sectors to the political economy of the pricing of basic services such as water and electricity, in all countries but particularly in poor communities.

FDI in Africa, as the region with the highest concentration of LDCs, is directed heavily towards primary industry sectors, especially oil and mineral resources. Interest in tertiary sectors seems to have been driven by one-off privatisations rather than an attractive environment for greenfields investments. The only sector in which Africa seems to have had relative success is telecommunications, whereas it struggles severely to stimulate private investment in water, energy and transport.

Few of the sectors categorised by the UNFCCC in its summary of NAPA priorities (UNFCCC 2010) appear well matched with private patterns of investment and lending. In the agricultural sector, FDI tends to follow cash crops rather than food staples, and to benefit large industrial production rather than small-scale farming. Hence, agricultural FDI may not necessarily be generating food security benefits, nor the right kind of investments for buffering livelihoods and reducing wider vulnerabilities among local communities. Investments in the energy sector are visible, but more analysis is needed to see how these interact specifically with adaptation objectives. Tourism FDI consists mostly of capital flows to hotels. It is plausible that investments in telecommunications can play a significant positive role in supporting early warning systems, among other adaptation benefits. Water sector investments seem highly concentrated in East Asia. Finally, there is virtually no evidence of FDI supporting either the health or education sectors. Overall, these coarse level patterns do not look promising for adaptation outcomes.

Proportions of private equity and debt vary between regions and countries

Equity and debt flows do not necessarily follow the same regional distribution pattern, resulting in variations in the relative proportions of different financial instruments. In other words, different regions seem to attract different ratios of FDI equity, portfolio equity and private debt. This variation is also likely to exist at the country level, meaning different countries have different types and scale of access to private resources.

In Africa, lending opportunities are low relative to other regions, which might mean less flexibility in being able to finance priority adaptation projects.

Might climate vulnerability reduce a country's ability to attract private finance?

Braunstein (2006) summarises an array of factors which, according to empirical evidence, influence private actors in their choice of investment location. These include “high and growing per capita incomes, large domestic markets, a well-educated workforce, well-developed physical and technological infrastructure, proximity to export markets, and social and political stability; the presence of other foreign investors – the ‘agglomeration effect’ – is also a significant factor.” (p.5)¹⁵ From this, an interesting point is made: “growth and development lead to FDI, rather than FDI leading to growth and development” (ibid.).

Extending this logic to the sphere of climate finance, it raises a concern that countries which are particularly susceptible to climate-related risks may thus become less attractive for private financiers than they are now, because of degrading domestic conditions. This is not good news for the many developing countries that already struggle to get access to foreign capital.

¹⁵ Leeds and Sunderland (2003) also highlight the effect of the “herd mentality” on equity investments.

3.2 Accounting of private climate finance

Though the focus of this paper has not been on accounting issues, the data examined raises several questions about private finance that need to be addressed by policymakers when designing a measurement and accounting regime for international climate finance.

Buchner et al. (2011) estimate that there is no private finance going towards adaptation outcomes. Such a proposition seems difficult to justify; one only has to look at donor-funded projects to see elements of co-financing coming from the private sector, while the World Bank promotes that its Green Bonds – sourced from private capital markets – are being used to fund adaptation.¹⁶ Such a conclusion is perhaps partly a reflection of the fact that the concept of “adaptation” remains poorly defined – and hence analysed – in the climate finance literature and debate, and that even the concept of “finance” has been inadequately dissected within this community and within the climate change negotiations. This looseness in describing both key policy objectives and the tools for achieving them has, unsurprisingly, caused great difficulty for efforts to measure and account for relevant flows.

This also perhaps reflects a broader and equally worrying feature of much of the climate finance discussion, including the debate over how it will be measured, reported and verified: that it proceeds without giving proper and full attention to *what outcomes finance is intended to deliver*. In this respect, the discussion among research and policy communities needs to shift from “what can we measure, and therefore, what should we report?” (an approach taken by almost all of the efforts to date at quantifying flows of private climate finance) to “what do we *need*, and therefore what should we measure and report?”

The analysis undertaken in this paper brings to the surface a number of specific questions and uncertainties that need further attention if we are to really understand the scale of the private sector’s contribution to adaptation in developing countries. For instance:

- a) Private finance is accountable to the notion of profitable returns, not to possible co-benefits of a project such as GHG mitigation (except where successful mitigation is tied to the revenue stream) or vaguer concepts like “adaptation” (except possibly within a company’s own supply chain). Since the key metric for an investor is profitable financial return, there is always the possibility that, sometime after the initial investment, activities shift away from, or worst case even counter to, climate change objectives. Private equity, for instance, is driven by the notion of “profitable withdrawal” (Leeds and Sunderland 2003), which means equity invested can be disinvested, or domestic earnings repatriated to the investor. How an international regime that is meant to deliver and account for climate finance to developing countries will oversee this remains for now an open question. How should it deal with this movement of resources?
- b) There is an important qualitative difference between longer-term equity (FDI) and shorter-term equity (portfolio). This needs to be further teased out, particularly with respect to the different ways in which it might support (or undermine) adaptation efforts.

¹⁶ See, for example, “Climate Finance and the World Bank: The Facts”, <http://climatechange.worldbank.org/content/climate-finance-and-world-bank-facts>. A list of projects quoted by the World Bank (personal communication) as being Green Bonds-funded adaptation projects includes: (1) a flood-prevention project in China (<http://www.worldbank.org/projects/P101829/xining-flood-watershed-management?lang=en>), (2) a forestry project in China (<http://www.worldbank.org/projects/P105872/integrated-forestry-development-project?lang=en>), (3) an emergency recovery and disaster management projects in the Dominican Republic (<http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=40941&menuPK=228424&Projectid=P109932>), and (4) a water management project in Tunisia (<http://web.worldbank.org/external/projects/main?pagePK=64312881&piPK=64302848&theSitePK=40941&Projectid=P095847>).

- c) A key question in assessing FDI is whether the data represents flows “(1) for the creation, expansion or improvement of productive assets, generating additional productive capacity, (2) to finance changes in ownership of assets (M&As), or (3) to add to the financial reserves of foreign affiliates” (UNCTAD 2011, p.12). Each of these implies a different outcome in terms of whether additional financial resources are made available. How will the climate finance regime detect and report on equity transfer from one party to another (i.e., mergers and acquisitions) where these don’t relate to additional financial resources or services for communities? Focusing on the concept of greenfields investment may be one way to minimise this concern, since it only includes flows that generate new activity on the ground.
- d) There is sometimes an issue with the reinvested earnings component of FDI being “parked” unproductively on the books of a developing country enterprise (i.e., by transnational corporations in foreign affiliates, for tax reasons for instance), without it actually contributing to productive new investment. If unaccounted for, this has the effect of overstating the productive component of FDI, so it needs to be picked up within a climate finance regime intended to generate meaningful adaptation and mitigation actions.
- e) Debt statistics can also be distorted by international mergers and acquisitions. Recent years have witnessed a trend of foreign banks acquiring domestic banks in developing countries. In accounting terms, this activity boosts the share of foreign bank credit in total domestic credit and boosts estimates of foreign lending that appear in BIS statistics (Rodríguez and Santiso 2007). The extent to which this results in a boost in real financial resources disbursed to recipients in developing countries – as opposed to just a change in source – needs scrutiny.
- f) As with equity, debt flows can also run in both directions, for instance the direct investment enterprise in a developing country can provide loan finance to the parent company. How will this be treated in a regime for governing flows of climate finance?
- g) Research on FDI and TNCs is hampered by a lack of comparability in data across sources and countries (UNCTAD 2008). Not all countries include the reinvested earnings component when reporting FDI, and non-equity modes can be reported to different degrees. This is especially important to consider in light of the fact that finance can actually flow *out of* developing countries via these mechanisms (through repatriation of earnings), which has a bearing on net flows.
- h) Mitigation and adaptation are not always aligned. Investments in some sectors, particularly energy, have the potential to simultaneously produce both positive and negative climate outcomes. Expanding fossil-fuel based electricity production can in some cases support community efforts at adaptation, for example if it improves community access to modern energy and thus reduces the time and financial resources associated with biomass energy use (resources which are in some regions themselves threatened by climate change). At the same time, such investments result in a net increase in GHG emissions to the atmosphere and may be locking in carbon-intensive development pathways. This must be kept in view when assessing future contributions of private finance to global accounts of “climate finance” (it is also a relevant issue for public finance).

3.3 Varying quality of private finance for meeting adaptation needs

As explained in the introduction, this paper has not approached the important question of to what extent different kinds of private flows are likely to generate tangible adaptation benefits. What has become clear throughout this paper is that not all FDI is the same. Different types of finance (FDI equity, portfolio equity, FDI loans, bank loans) and different investment entry modes (greenfields, acquisition) result in a different *quality* of outcome for recipient communities. Such differences matter and must be taken account of within the discussion on climate finance – both for effectiveness and accounting purposes.

It is also important to note the wider literature on FDI, which suggests that although there remains much enthusiasm about the potential of the private sector to fill the gap in climate finance for developing countries, not all literature is positive about the effects of FDI for local communities (for example, Fieldman 2011). Braunstein (2006) argues that “very little is understood about the dynamic impact of FDI. Even where positive correlations between FDI and investment, employment or wages appear, there is little analysis of whether and how the impact is sustained – to what extent (and how) FDI impacts the process and trajectory of development” (p.13). UNCTAD (2009) cautions that private flows in key sectors like agriculture carry risks for local livelihoods and in any case tend to concentrate on large-scale, export-oriented production rather than strengthening the resilience of local food staples. This suggests that relying on private financial flows to enhance development has at best a mixed track record.

3.4 Challenges for public finance

The patterns in private investment elucidated in section 2 suggest there are very large gaps to fill in sectors and regions not attractive to private finance. This implies a herculean task for public agents, on two fronts: they must ensure public finance is prioritised towards areas not benefiting from private flows; and they must use public funds to leverage greater private interest specifically in these areas.

A quick (and obviously incomplete) glance at how public resources are being channelled towards climate change, and adaptation in particular, yields the following:

- Bilateral finance institutions (BFIs) have so far categorised most of their adaptation work as being in the water sector, making up 77 per cent of adaptation funding in 2008 and 73 per cent in 2009. This may be filling a gap, since private water sector projects outside East Asia appear sparse. In 2008 BFI adaptation finance was heavily focused on Asia, with only 5 per cent directed towards Sub-Saharan Africa for instance. However, it appears to have since shifted; in 2010 just over 50% of adaptation funds were directed to Africa and the Middle East (Atteridge et al. 2009; UNEP 2010; UNEP 2011, forthcoming).
- In sectors deemed important from an adaptation perspective, public ODA resources appear to be most heavily concentrated in Africa, followed by South Asia (Brown et al. 2010). On the whole these are regions that seem less attractive to private finance (excepting India in South Asia).

This question needs further analysis, particularly in the context of how mechanisms established by the international community – such as the Green Climate Fund – are to be structured. Overall, there are at least some positive signs that public activity may not mirror the regional and sectoral patterns of international private finance.

At the same time, however, there is a risk that the increasing political context of discussions about leveraging private resources might have the effect of redirecting public funds to regions and sectors where the private sector is already more interested. This would be a perverse outcome from the perspective of the many poor, vulnerable communities who don't have access to private resources. Leveraging needs to shift private flows, rather than follow them.

3.5 Concluding remarks

This paper raises many questions about the behaviour of private finance without definitively answering any of them. Much further analytical work is needed to interrogate private finance, as a concept in the adaptation debate and in material flow terms, if international negotiations and mechanisms are to deliver meaningful changes in resource flows to vulnerable communities.

Further analysis on distribution patterns should look beyond data on total FDI flows. While helpful as a first level of review, looking only at the absolute value of FDI flows into countries is not sufficient,

since it tells only part of the story. We would never expect China and Tuvalu to receive – or to seek – the same levels of investment. It is therefore useful to examine more closely the scale of private investment by drawing on other indicators, for instance comparing the value of the inward FDI flows relative to the size of the host economies (FDI per GDP or as percent of gross fixed capital formation), population (FDI per capita) or estimated vulnerability to climate change (FDI per adaptation needs). For instance, Palmade and Anayiotas (2004) note that while China accounts for 39 per cent of FDI inflows to the developing countries, it also accounts for almost 30 per cent of the developing world's population, and they call China's performance in attracting FDI, relative to GDP, "good but not extraordinary", with FDI at 3.8 per cent of GDP in 1999-2002 – lower than 19 other developing countries.

Sectoral analysis needs to go much deeper, as well as to look not only at broad economic sectors but also at how the private sector has engaged (or not) with important activities such as capacity building, information systems, and disaster preparedness planning.

Other distribution patterns not examined here are also important to analyse, for instance the distribution of finance between rural and urban recipients and the extent to which private finance may be favouring large transactions over smaller projects and activities. These have implications for who can access finance and what types of adaptation measures might be privately supported. Data on private participation in infrastructure, for instance, indicates on average that projects which involve more than USD 1 billion make up around half of total investment in new infrastructure in developing countries (The World Bank 2011b). In the water sector, the three largest projects involving private parties in 2010 accounted for 76 per cent of total investment figures in developing countries (The World Bank 2011c). If such statistics are more widely representative of patterns in private investment it may be of concern, since funding delivered in large chunks implies fewer projects which in turn would result in a concentration of adaptation benefits in fewer locations. Patterns in the growth of microfinance could be an interesting departure point for analysis, to examine how small scale finance may be evolving as a channel for private investors.

Of course, it is plausible that flows to key activities relevant from an adaptation perspective do not follow similar patterns as the coarse data examined here. To assess this it is necessary to take a much finer-grained comb through FDI and lending flows, including at the sub-national level, to interrogate projects against actual adaptation outcomes.

This is not the same thing as attempting to quantify private "climate finance". In the rush to put numbers next to the question of how much private climate finance is being delivered, there is a danger that the numbers – which are at this stage meaningless in their precision – take on a life of their own. It is more important at this stage to actually craft out a substantive meaning for "private climate finance", to understand that it consists of different kinds of flows and transactions, that not all are equal in the hands of the recipient, and that not all have the positive effect that terms such as "Green FDI" might at first suggest. We need to move away from "what can we measure?" to "what do we need?" in form, size, distribution and so on. Only then can we really begin to dissect quantities, to begin the accounting process.

REFERENCES

- Atteridge, A. (2010) *Private Sector Finance and Climate Change Adaptation: How Can Voluntary Private Finance Support Adaptation in Developing Countries?* SEI Policy Brief. Stockholm Environment Institute, Stockholm, Sweden. <http://sei-international.org/publications?pid=1323>.
- Atteridge, A., Kehler Siebert, C., Klein, R. J. T., Butler, C. and Vilchis Tella, P. (2009) *Bilateral Finance Institutions and Climate Change: A Mapping of Climate Portfolios*. SEI Working Paper. Stockholm Environment Institute, Stockholm, Sweden. <http://sei-international.org/publications?pid=1324>.
- Braunstein, E. (2006) *Foreign Direct Investment, Development and Gender Equity: A Review of Research and Policy*. UNRISD Occasional Paper No. 12. United Nations Research Institute for Social Development, Geneva, Switzerland. <http://www.unrisd.org/80256B3C005BCCF9/%28httpPublications%29/5159E5733338C836C12571390033F5E2>.
- Brown, J., Bird, N. and Schalatek, L. (2010) *Direct Access to the Adaptation Fund: Realising the Potential of National Implementing Entities*. ODI Climate Finance Policy Brief No. 3. Overseas Development Institute, London, UK. <http://www.odi.org.uk/resources/details.asp?id=5175&title=direct-access-adaptation-fund-realising-potential-national-implementing-entities>.
- Buchner, B., Falconer, A., Hervé-Mignucci, M., Trabacchi, C. and Brinkman, M. (2011) *The Landscape of Climate Finance*. Climate Policy Initiative, Venice, Italy. http://www.climatepolicyinitiative.org/generic_datas/view/publication/117.
- Cali, M., Massa, I. and te Velde, D. W. (2008) *The Global Financial Crisis: Financial Flows to Developing Countries Set to Fall by One Quarter*. Overseas Development Institute, London, UK. <http://www.odi.org.uk/resources/details.asp?id=2523&title=global-financial-crisis-financial-flows-developing-countries-set-fall-one-quarter>.
- Fieldman, G. (2011) 'Neoliberalism, the production of vulnerability and the hobbled state: Systemic barriers to climate adaptation.' *Climate and Development*, 3(2). 159–74. doi:10.1080/17565529.2011.582278.
- Hamilton, K., Sjardin, M., Peters-Stanley, M. and Marcello, T. (2010) *Building Bridges: State of the Voluntary Carbon Markets 2010*. Bloomberg New Energy Finance and Ecosystem Marketplace, New York, NY, and Washington, DC, US. http://forest-trends.org/publication_details.php?publicationID=2433.
- Harris, C. (2003) *Private Participation in Infrastructure in Developing Countries: Trends, Impacts, and Policy Lessons*. Working Paper No. 5. The World Bank, Washington, DC, US. <http://go.worldbank.org/XQYOM8YI82>.
- International Monetary Fund (2011) 'World Economic Outlook Database April 2011.' April. <http://www.imf.org/external/pubs/ft/weo/2011/01/weodata/index.aspx>.
- Jeanneau, S. and Micu, M. (2002) *Determinants of International Bank Lending to Emerging Market Countries*. BIS Working Papers No. 112. Bank for International Settlements, Basel, Switzerland. <http://www.bis.org/publ/work112.htm>.
- Leeds, R. and Sunderland, J. (2003) 'Private Equity Investing in Emerging Markets.' *Journal of Applied Corporate Finance*, 15(4). 111–19. doi:10.1111/j.1745-6622.2003.tb00532.x.
- Liebreich, M. (2011) *Towards a Green Climate Finance Framework*. BNEF White Paper. Bloomberg New Energy Finance, London, UK, and New York, NY, US. <http://bnef.com/WhitePapers/download/46>.
- Organisation for Economic Co-operation and Development (2008) 'Glossary of Foreign Direct Investment Terms and Definitions.' Part of *OECD Benchmark Definition of Foreign Direct Investment - 4th Edition*. OECD Directorate for Financial and Enterprise Affairs, Paris, France. <http://www.oecd.org/dataoecd/56/1/2487495.pdf>.

- Organisation for Economic Co-operation and Development (n.d.) 'FDI statistics and data - frequently asked questions.' http://www.oecd.org/document/32/0,3746,en_2649_33763_45922144_1_1_1_1,00.htm. [Accessed 24 November, 2011].
- Palmade, V. and Anayiotas, A. (2004) *FDI Trends: Looking Beyond the Current Gloom in Developing Countries*. Note Number 273. The World Bank Group Private Sector Development Vice Presidency, Washington, DC, US. <https://www.wbginvestmentclimate.org/uploads/FIAS%20FDI%20Trends.pdf>.
- Rodríguez, J. and Santiso, J. (2007) *Banking on Development: Private Banks and Aid Donors in Developing Countries*. OECD Development Centre Working Paper No. 263. Organisation for Economic Co-operation and Development, Paris, France. <http://www.oecd.org/dataoecd/6/49/39647757.pdf>.
- Stadelmann, M., Roberts, J. T. and Michaelowa, A. (2011) *Accounting of Private Climate Finance: Types of Finance, Data Gaps and the 100 Billion Dollar Question*. Climate Strategies, Cambridge, UK. <http://www.climatestrategies.org/component/reports/category/71/331.html>.
- The World Bank (2011a) *Private Activity in Energy Remained at a Peak Level but Was Highly Concentrated in 2010*. PPI Data Update Note 53. Public-Private Infrastructure Advisory Facility, Washington, DC, US. <http://water.worldbank.org/water/node/83935>.
- The World Bank (2011b) 'Private Participation in Infrastructure Database.' August. <http://ppi.worldbank.org/>.
- The World Bank (2011c) *Private Activity in Water and Sewerage Remains Subdued*. PPI Data Update Note 49. Public-Private Infrastructure Advisory Facility, Washington, DC, US. <http://water.worldbank.org/water/node/83935>.
- The World Bank (2009) *Global Development Finance 2009: Charting a Global Recovery*. Washington, DC, US. http://publications.worldbank.org/index.php?main_page=product_info&products_id=23586.
- The World Bank (2005) *Global Development Finance 2005: Mobilizing Finance and Managing Vulnerability*. Washington, DC, US. http://publications.worldbank.org/index.php?main_page=product_info&cPath=0&products_id=22154.
- The World Bank (2004) *Global Development Finance 2004: Harnessing Cyclical Gains for Development*. Washington, DC, US. http://publications.worldbank.org/index.php?main_page=product_info&cPath=0&products_id=21945.
- UNEP Risoe Centre (2011) 'CDM projects by host region.' 1 November. <http://cdmpipeline.org/cdm-projects-region.htm>.
- United Nations Conference on Trade and Development (2011) *World Investment Report 2011: Non-equity Modes of International Production and Development*. Geneva, Switzerland. <http://www.unctad.org/templates/WebFlyer.asp?intItemID=6018&lang=1>.
- United Nations Conference on Trade and Development (2009) *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development*. Geneva, Switzerland. <http://www.unctad.org/Templates/WebFlyer.asp?intItemID=5539&lang=1>.
- United Nations Conference on Trade and Development (2008) *World Investment Directory Volume X, Africa 2008*. UNCTAD/ITE/IIT/2007/5. Geneva, Switzerland. <http://www.unctad.org/Templates/WebFlyer.asp?intItemID=5539&lang=1>.
- United Nations Conference on Trade and Development (2006) *FDI in Least Developed Countries at a Glance*. Geneva, Switzerland. <http://www.unctad.org/templates/Download.asp?docid=7208&lang=1&intItemID=5201>.
- United Nations Conference on Trade and Development (n.d.) 'FDI Flows.' *World Investment Flows*. <http://www.unctad.org/Templates/Page.asp?intItemID=3153>. [Accessed 24 November, 2011].

United Nations Conference on Trade and Development (n.d.) 'UNCTADSTAT.'

http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx?sCS_referer=&sCS_ChosenLang=en.

[Accessed 19 November, 2011].

United Nations Environment Programme (2011, forthcoming) *Bilateral Finance Institutions and Climate Change: A Mapping of Public Financial Flows for Mitigation and Adaptation to Developing Countries in 2010*. UNEP Climate Change Working Group for Bilateral Finance Institutions annual report. To be released at COP17, Durban, South Africa. Prepared by the Stockholm Environment Institute (Clarisse Kehler Siebert, Juan Hoffmaister, Richard J.T. Klein) and UNEP Working Group staff.

United Nations Environment Programme (2010) *Bilateral Finance Institutions and Climate Change: A Mapping of 2009 Climate Financial Flows to Developing Countries*. UNEP Climate Change Working Group for Bilateral Finance Institutions annual report. Prepared by the Stockholm Environment Institute (Clarisse Kehler Siebert, coordinating author; Aaron Atteridge, and Richard J.T. Klein) and UNEP Working Group staff, Cancun, Mexico.

http://www.unep.org/publications/search/pub_details_s.asp?ID=6178.

United Nations Framework Convention on Climate Change (2010) *National Adaptation Programmes of Action: Index of NAPA Projects by Sector*. Bonn, Germany.

http://unfccc.int/files/cooperation_support/least_developed_countries_portal/napa_project_database/application/pdf/napa_index_by_sector.pdf.

United Nations Population Fund and United Nations Population Division, DESA (2011) *Special Bulletin on the Population Dynamics in Least Developed Countries, May 2011*.

https://www.unfpa.org/webdav/site/global/shared/documents/publications/2011/LDC_Fact_Sheet.pdf.

ANNEX 1

Table A1: Net capital inflows to developing countries, 2001-2008 (in USD billions)

<i>\$ billions</i>	2001	2002	2003	2004	2005	2006	2007	2008e
Current account balance	15.5	68.6	118.4	171.2	306.6	438.2	406.1	377.9
<i>Financial flows:</i>								
Net private and official inflows	224.2	162.4	258.6	370.7	498.7	668.3	1157.7	727.3
Net private inflows	197.3	156.8	269.1	396.5	569.7	739.2	1157.5	706.9
Net equity inflows	172.3	161.5	181.0	254.7	347.2	462.7	658.6	599.0
Net FDI inflows	166.0	152.5	155.5	216.0	279.1	358.4	520.0	583.0
Net portfolio equity inflows	6.3	9.0	25.5	38.7	68.1	104.3	138.6	15.7
Net debt flows	51.9	0.9	77.6	116.0	151.5	205.6	499.1	128.3
Official creditors	26.9	5.6	-10.5	-25.8	-71.0	-70.9	0.2	20.4
World Bank	7.5	-0.3	-0.5	1.6	2.8	-0.4	4.9	7.1
IMF	19.5	14.1	2.5	-14.7	-40.1	-26.7	-5.1	10.9
Other official	-0.1	-8.2	-12.5	-12.7	-33.7	-43.8	0.4	2.4
Private creditors	25.0	-4.7	88.1	141.8	222.5	276.5	498.9	107.9
Net M-L term debt flows	2.1	0.7	26.6	73.3	135.9	166.4	296.4	124.2
Bonds	10.2	10.1	20.4	36.0	56.2	26.6	85.4	10.5
Banks	-1.9	-3.2	10.4	41.3	84.2	144.6	214.5	123.0
Other private	-6.2	-6.2	-4.2	-4.0	-4.5	-4.8	-3.5	-9.3
Net short-term debt flows ^a	22.9	-5.4	61.5	68.5	86.6	110.1	202.5	-16.3
Balancing item ^b	-159.1	-69.9	-90.7	-144.9	-419.5	-476.6	-486.3	-657.7
Change in reserves (- = increase)	-80.4	-160.6	-285.5	-396.2	-385.5	-629.9	-1077.3	-447.3
<i>Memorandum items</i>								
Private inflows excluding short-term debt	174.4	170.7	203.9	340.7	483.3	629.1	955.0	723.2
Net FDI outflows	12.7	16.8	22.4	44.5	59.2	125.2	138.8	164.0
Net portfolio equity outflows	10.8	6.0	8.2	7.2	11.6	21.5	50.6	80.0
Workers' remittances	95.6	115.9	143.6	161.3	191.2	229.0	265.0	305

Source: World Bank (2009).

ANNEX 2

Table A2. Private participation in infrastructure, 1990-2010

Sector	Project numbers	Total investment commitments (USD millions)
East Asia and Pacific		
Energy	609	124987
Telecom	75	91286
Transport	354	78371
Water and sewerage	402	29617
TOTAL	1440	324261
Latin America and the Caribbean		
Energy	635	192656
Telecom	149	280459
Transport	475	115612
Water and sewerage	224	24751
TOTAL	1483	613478
South Asia		
Energy	290	121475
Telecom	72	107865
Transport	279	46005
Water and sewerage	13	355
TOTAL	654	275700
Middle East and North Africa		
Energy	33	17733
Telecom	44	52492
Transport	34	7124
Water and sewerage	22	3772
TOTAL	133	81121
Sub Saharan Africa		
Energy	108	10170
Telecom	173	85263
Transport	90	12062
Water and sewerage	26	266
TOTAL	397	107761

Source: World Bank (2011b).

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