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# Supporting the Momentum of Paris: A Systems Approach to Accelerating Climate Finance

## Needs and Actor Analysis

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Working Paper

## Descriptors

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# 1. Introduction

## 1.1 Background

This working paper is the first of two from the project, “Supporting the Momentum of Paris: A Systems Approach to Accelerating Climate Finance.”

Systems thinking approaches provide the potential to identify and measure how international public climate finance actors can interact:

- With each other, given their own perspectives and constraints on what they can do, their future direction of travel as well as the constraints and direction of their peers.
- With developing country financial systems, given emerging trends in green finance across the developing world, potentially unlocking new sources of finance.

The goals of the project are therefore to:

- Identify developing country needs and accompanying gaps in climate finance offerings that could be filled by public actors.
- Understand the current offerings and comparative advantages of major international public actors—such as donors, bilateral agencies, export credit agencies, multilateral and bilateral development banks—in supporting climate finance needs.
- Develop a systemic framework to analyze how international public climate finance flows interact with each other and with developing country domestic financial systems.
- Provide recommendations for how to use a systems approach to identify opportunities to coordinate and collaborate.

This paper focuses on the first two goals of identifying the needs and gaps in international public climate finance system and how specific actors are placed to respond.

## 2. Reviewing the trends, gaps and needs

On November 4, 2016, the Paris Agreement entered into force. 190 countries have submitted 164 nationally determined contributions (NDCs) outlining their own goals and methods to reduce emissions in common effort to limit global temperature increases this century.

For some of the 146 *developing* countries who submitted NDCs, understanding how public finance institutions can most effectively support their implementation by scaling up private flows is a crucial next step.

The following section reviews finance, capacity and barrier/risk gaps for climate finance flows based on:

- available estimates on investment gaps by sector and income group
- surveys and demand for innovative climate finance solutions to identify the most pressing instruments needed as signaled by practitioners in developing countries.

### 2.1 The Climate Investment Gap

Estimates for low carbon and climate resilient investment needs have focused primarily on the mitigation potential of technologies and infrastructure (NCE 2013). The sustainable infrastructure investment gap across developing countries is estimated at USD 33 trillion until 2030 (McKinsey 2016), with USD 27 trillion allocated to Upper middle-income countries (UMIC),

Table 1: Investment gaps by income group and sector from 2015-2030 (adjusted to 2016 USD trillion)

	LOW INCOME	LOWER MIDDLE INCOME	UPPER MIDDLE INCOME	TOTAL
Energy access	0.4-0.5	0.6-0.9		0.9-1.3
Power infrastructure	1	3		4-4.6
Energy Efficiency				1.5-3.7
Transport	1.5	4.6		3.8-7.3
Forests, Agriculture & food security	1	1.2		2.3-3.9
Water & Sanitation*	0.2	0.5		4
Health	0.4-0.5	0.7-0.9		1-2.2
Telecoms	0.7	2.2		2.9-3.7
<b>Total</b>	<b>1.1-5.4</b>	<b>5.5-13.3</b>	<b>19.3-29.7</b>	<b>18-36.3</b>

Source: Delgado et al 2015; IFC 2016; McKinsey 2016; Schmidt-Traub 2015; SE4ALL 2016; UNCTAD 2014. \*Note numbers by income group refer only to coverage of basic needs

USD 5 trillion to lower middle income countries (LMIC) and USD 1 trillion to low income countries (LIC).

In addition to investment needs across low carbon solutions in renewable energy and energy efficiency, developing countries require substantial investments to meet growing demands for housing, water, transportation, health and communications needs, as represented by the Sustainable Development Goals (SDGs).

Analysis of investment needs related to achieving the Sustainable Development Goals (SDGs) by sector illustrate a wider incremental investment need, particularly with regard to LIC and LMICs, bringing their investment needs to USD 5 and 12.5 trillion respectively (Schmidt-Traub 2015).

Integrating climate resilience, adaptation and mitigation costs into these investments goes hand-in-hand with achieving objectives as set out in developing countries NDCs. **We find an USD 18-36 trillion investment gap, particularly significant in power generation, transportation, and water and sanitation sectors.**

For low income countries, investment needs in forest conservation, agriculture and food security are relatively large due to the significant contribution these sectors make to economic growth in these economies.

While studies on estimating investment needs and gaps highlight major sectors in need of support, results vary significantly. Broad global studies rely on technological, cost and demographic assumptions to arrive at potential investment figures. These can struggle to reflect the latest trends in both technology costs, and finance flows in key developing countries that have an oversized effect on estimates. For example, McKinsey (2016) noted a change in growth prospects for the Chinese economy out to 2030 would add USD 10 trillion to its estimates.

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*As developing countries begin to implement NDCs, greater detail and clarity on precise sector-based finance gaps that speak to potential investors will need to emerge as part of bottom-up, country-specific investment plans.*

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The IFC (2016), analyzing both objectives within NDCs as well as broader national development plans and goals, identify an investment potential of USD 4 trillion across 11 key LMIC country markets, and 19 trillion across 10 LMIC markets out to 2030. Green buildings in China alone provide an estimated investment potential of USD 13.6 trillion out to 2030.

85% of developing countries have indicated that their NDC submissions require revision or clarification in terms of objectives, targets, developing policies and gathering accurate data to estimate baselines for each of those activities (UNFCCC 2016). This report focuses on the role of public finance.

## 2.2 The barriers to scaling up climate finance – and solutions

Investment gap estimates do not reveal where support may be needed most. A UNFCCC survey of 79 developing countries on the type of support necessary for NDC implementation revealed further priorities not reflected in investment gaps. While support for the RE sector featured prominently across regions, waste and transport were priorities across Asia and West Africa; and forestry in East Africa and the Caribbean (UNFCCC 2016). Access to finance is generally seen as the most urgent need across all sectors, over capacity building and technical assistance.

The need to ‘access finance’ corresponds with the analysis of 132 eligible submissions to the Global Innovation Lab for Climate Finance and the Fire Awards over three cycles from 2014 to 2016 that targeted developing countries. Each submission, crowd-sourced from entrepreneurs, financial institutions and academics active in climate finance, describes a distinct barrier to be addressed and a solution proposed including specific financial instruments and delivery models used to deliver the solution. The submissions provide a useful data source for understanding the major barriers and solutions as identified by the climate finance community in developed and developing countries. 73% of submissions were deemed as mitigation or primarily mitigation focused ideas, with the remaining 28% adaptation focused.

**The most common barriers cited across 35% of ideas were both access to finance and skill gaps among investors. However, for adaptation focused ideas, barriers such as lack of suitable financial services and lack of data to assist investment decision making were most cited, by 42% and 36% of the ideas.** These barriers

also featured in mitigation focused ideas along with high costs of capital.

69% of submissions considered a fund concept such as a blended structured finance vehicle as the key delivery model through which to address the barriers identified. Such vehicles often house a combination of public concessional financial instruments such as grants, guarantees or subordinate investments tailored to attract private investments for the given sector and country. But tools and services were seen in more relative need for adaptation barriers with 25% of those solutions delivered in that form.

The financial instruments most commonly cited to be deployed by the ideas followed those most easily integrated with structured funds and finance facilities included commercial investment (43%), guarantees (37%), grants (36%) and subordinate investments such as concessional debt or equity (35%). However technical assistance was deemed of most need in adaptation focused ideas (58% against 32% in mitigation), and data tools were also identified as a key instrument for 39% of those ideas.

Institutional investors (64%), commercial banks (53%) and corporations (42%) were targeted by most ideas as the sources of private capital to leverage with relatively little difference between mitigation and adaptation focused ideas. This follows efforts to unlock large pools of capital available from institutional investors such as pension funds and insurance companies, however the most active financial actors in developing countries are commercial banks (see Oliver et al 2017). Further, the target regions of deployment of solutions were also similar between mitigation and adaptation focused ideas. Approximately 43% of ideas generally targeted all developing countries, with Sub-Saharan Africa, Latin America & Caribbean, and East Asia & Pacific receiving most specific attention.

Predictably, the electricity sector, or specifically renewable energy, dominated the sector focus of ideas with 50% of ideas, particularly in mitigation. However, for adaptation focused ideas, agriculture sector was targeted in 64% of ideas, followed by financial services such as insurance provision, by 39% of ideas.

## 2.3 The role of public climate finance

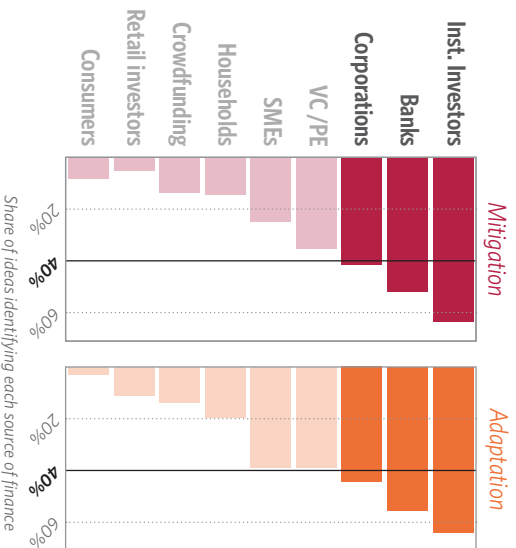
Public finance actors are faced with multiple demands to support climate and broader development goals directly and indirectly. Both lower and upper-middle-income countries have the potential to self-finance the achievement of the SDGs, but some international

Figure 1 Most cited barriers to be addressed, delivery models for solutions and instruments to be deployed by Lab/Fire submissions 2014-2016 across mitigation and adaptation focused ideas, sectors, regions and sources of private capital. All figures represent % of 132 submissions where datapoint is mentioned.

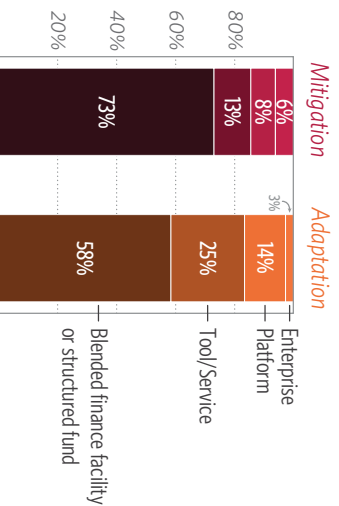
Of 132 eligible ideas submitted to the Global Innovation Lab for Climate Finance and the FIRE awards over 2014-2016, 73% were focused on mitigation or primarily on mitigation and 28% on adaptation:



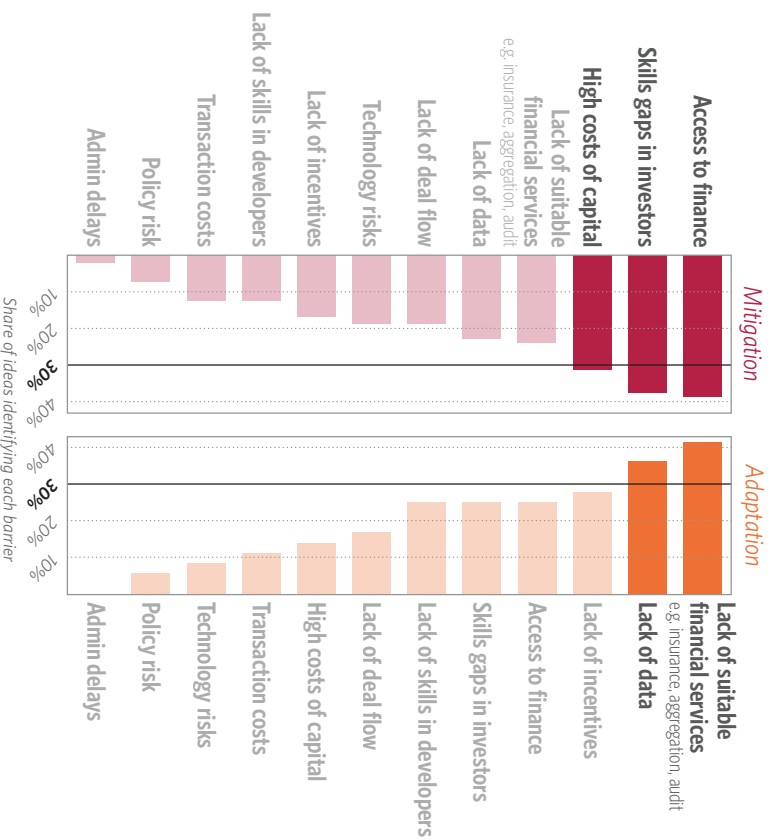
Over 40% of ideas targeted institutional investors, banks and corporations as sources of private finance:



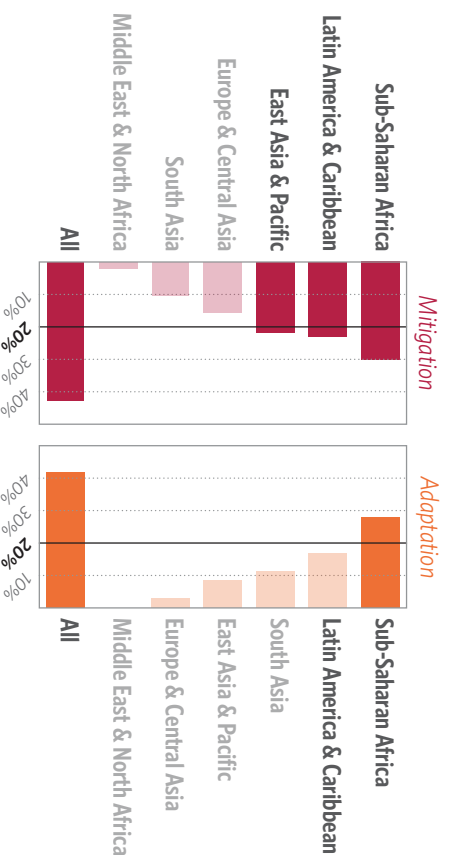
60% of all the ideas were in the form of blended finance facilities or structured funds, although tools and services were more prominent in adaptation ideas:



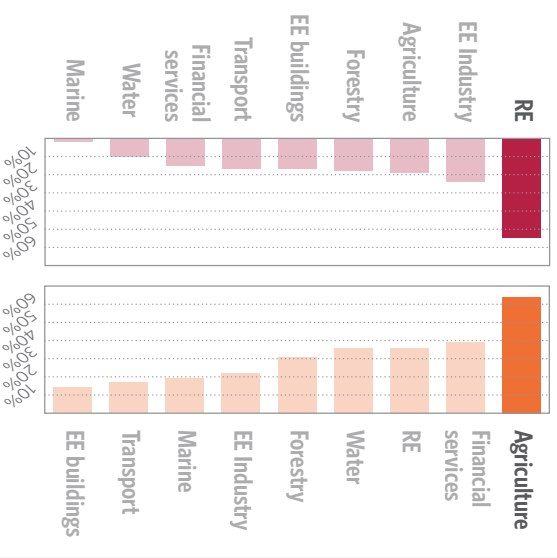
Financial barriers such as access, cost of capital, along with technical barriers such as skills gaps among investors were to be addressed cited in over 30% of mitigation ideas, whereas adaptation ideas focused mostly on lack of suitable financial services and data.



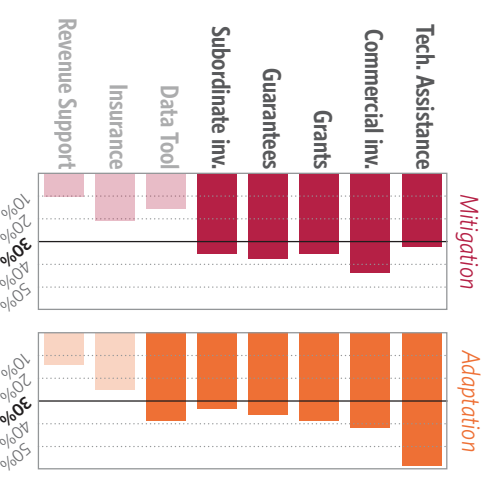
Countries and regions within Sub-Saharan Africa, Latin America & Caribbean and East Asia & Pacific received most attention.



Renewable energy dominating mitigation ideas with 55% of ideas targeting the sector, whereas agriculture was a key target for 64% of adaptation ideas.



The need for commercial investment, guarantees, grants and subordinate investment featured prominently across the ideas, technical assistance and data tools were instruments chosen to address adaptation barriers.



public finance during the early years of implementation will be needed (Schmidt-Traub 2015). Low income countries however, will require substantial international investment to achieve the SDGs and ensure climate-compatible outcomes.

*In the face of the significant investment gaps and support required by developing countries, public climate finance actors are called upon to take on greater risks, increase flexibility of financing provisions as well as predictability of finance flows, to help attract and crowd-in private investment.*

Bhattacharya et al (2015) propose that in order to close the sustainable infrastructure financing gap, international donors scale up official development assistance (ODA) by an additional USD 50-100 billion per year; Multilateral Development Banks (MDB) by an additional USD 150-200 billion per year; and with approximately USD 650 billion – 1 trillion per year provided by domestic governments and national development banks.<sup>1</sup> The latter amounts would be matched by sources of private finance including institutional investors and commercial banks, given the right policy frameworks and risk mitigation instruments at their disposal.

Using concessional finance is key to unlocking sources of private investment by tackling market and

institutional failures that prevent the deployment of capital. In mapping sources and flows of concessional climate finance, Trabacchi et al (2016) found a potential gap of USD 3.5 billion per year out to 2020 of externally sourced concessional finance in order to meet the climate finance goals of MDBs.<sup>2</sup>

However, the gap in total concessional finance may not only be restricted to absolute financial commitments, but also where the scale of finance is required by country and sector. Of 21 emerging market countries assessed by the IFC (2016) with a combined USD 23 trillion climate investment opportunity, only 5 countries have access to concessional finance through the International Development Association (IDA) arm of the World Bank. The remaining 16 countries across the LMIC and UMIC categories include the largest sources of both investment and mitigation potential.<sup>3</sup> Here, the effects of barriers restricting private finance flows are therefore outsized due to the lack of concessional sources available to address them. Instead, external sources of concessional finance from multilateral climate funds are relied upon at the project level to catalyze or de-risk private investment, entailing transactions costs.

Based on a detailed literature review, interviews, and analysis of The Lab and Fire Awards submissions, we summarize below the public finance instruments that have high potential to spur investment in priority sectors, but that are in short supply or absent from some developing countries. Table 2 shows which investment barriers each instrument aims to address. Providers of public concessional finance can help to develop, pilot and support the provision of such instruments as part of their toolbox.

Table 2: Instruments needed to address outstanding barriers in key sectors

SECTORS	BARRIER	INSTRUMENT
Renewable energy	Policy risks	Insurance mechanisms and guarantees
	Mismatch between local currency revenues and repayment obligations	Local currency lending or currency swaps with tenors aligned with contracts and payback periods; currency hedging tools
	Limited market liquidity	Early stage pre-construction and construction financing e.g. convertible/contingent recovery grants or equity for high-risk investment; subordinated debt
	Gap between equity required by lenders and availability of equity from developers	Subordinated debt with concessional sources of finance taking on a portion of the first-loss position
	Limited institutional investment capital	Investment vehicles (securitization or bundling)

1 Authors calculation using 35% of calculated investment gap is in high income countries.

2 MDBs source concessional finance internally through use of dedicated set-aside funds e.g. IDA and contributions from member countries.

3 Countries with IDA access include Nigeria, Vietnam, Ivory Coast, Kenya and Bangladesh. Countries limited to IBRD financing include: 6 LMIC countries (Egypt, India, Indonesia, Morocco, Philippines, Ukraine) and 10 UMIC countries (China, Brazil, Argentina, Colombia, Jordan, Mexico, Russia, South Africa, Turkey, Serbia).

SECTORS	BARRIER	INSTRUMENT
Energy efficiency	Lack of capacity to evaluate energy efficiency investments and develop adequate investment / financing approaches	Grants for technical support/capacity building
	High risk perceptions / lack of confidence on financial viability	Insurance instruments, partial guarantees or performance-based financial incentives
	High upfront costs	Long-term debt capital and investment subsidies
	Insufficient regulatory frameworks, and misaligned incentives	Technical assistance and policy advice
Low carbon and climate-resilient cities	Unstable regulatory and tax policies	Technical assistance and policy support
	Risk of unilateral changes to concession agreements that alter investors returns	Counterparty risk guarantee
	Lack of access to long-term debt for infrastructure projects due to lack of creditworthiness and high default risk	Credit enhancement with concessional finance, technical support (e.g. to issue bonds)
	Inability to integrate climate considerations in investment planning and design	Technical assistance to support pre-investment vulnerability assessment / project structuring
Climate-smart land-use, including agriculture, and forestry	Gaps in regulatory frameworks	Grants for policy dialogue and technical assistance
	Credit default risks associated with farmers' inadequate credit history and collateral	Risk management solutions such as first-loss coverage
	Exposure to weather-related risks	Risk mitigation and transfer mechanisms such as parametric insurance; Grants to support the collection of relevant data
	Lack of business-relevant information on potential hazards, exposure, and climate vulnerability	Provision of business-relevant data, impact assessment tools
	Lack of equity capital to develop adaptation/resilience products and services	Seed private equity funds / patient capital and venture capital with lower returns expectations
Water and sanitation	Lack of adequate revenue streams through tariff structure or high non-revenue water (NRW) provision	Targeted concessional finance for projects to reduce non-revenue water (NRW)
	Low private finance investment due to uncertainties on revenues and potential for political interference	Widen the use of public-private partnerships from just renewable energy and transport to other sectors, including water (only four PPPs from 2009 to 2014 out of 189 in low-income countries)
	High costs of adapting wastewater and storm-water infrastructure	Risk mitigation and insurance mechanisms.
	Lack of finance provided for water shortage adaptation needs, particularly in smaller communities	Provide better access to remittance-based finance
Health	Unaffordable to much of the population	Subsidy schemes for low-income and impoverished communities (or other instruments buttressed by policies aimed at enhancing social inclusiveness and accessibility of basic services)
	Limited impact via microfinance	Develop credit unions that help encourage responsible financial behavior through prior saving and affordable loans, which have made valuable contributions to health
	Difficulty in reaching services for population	Providing finance for enabling infrastructure or to help facilitate use of infrastructure at low to zero cost
Telecommunications	Limited private sector involvement due to concerns on anti-competitive behavior and consumer protection.	Grants for policy dialogue and technical assistance
	Exposure to weather- and disaster-related risks	Risk mitigation and transfer mechanisms such as parametric insurance; grants to support the collection of relevant data; financing enhanced resiliency against climate-related disasters



### 3. Role of International Public Finance Actors in Meeting Climate Finance Needs

In order to understand how to meet climate finance needs in developing countries, it is essential to identify the comparative strengths of public financial actors in providing flexibility, predictability and risk coverage, and areas where these institutional are yet to optimize climate finance support. This section draws on SWOT analyses conducted for each of six public actor groups to identify strengths and internal and external threats to scaling up climate finance.

#### 3.1 Overview of Public Climate Finance Actors

Table 3 below describes the different groupings of public climate financial actors. While this report focuses on the role of international public climate finance actors, we have also included in our discussion National Development Banks (NDBs). NDBs not only play important roles in delivering low carbon climate resilient infrastructure investment domestically, but also finance investments bilaterally.

Table 3: Overview of public finance actor-types

ACTOR GROUPING	PRIMARY ACTIVITY	DIRECTION OF FLOWS	PRIMARY PRODUCT OFFERINGS	SOURCES OF FUNDS
Bilateral aid agencies (e.g., USAID, NORAD)	Provide overseas development assistance (ODA) to developing countries, typically as support to governments	To developing countries	Grants, primarily for capacity building and technical assistance, to governments, civil society, and private sector	Annual government transfers
Multilateral Climate Funds (e.g., GEF, GCF)	Provide climate-specific grant and concessional financing to developing countries.	To developing countries	Grants to governments, civil society, and private sector - channeled via intermediaries	Regular, 3-4 year replenishment cycles
Export Credit Agencies (e.g., U.S. ExIm Bank, Korea ExIm)	Support the import and export of goods and services, by providing finance, and insurance against offshore risks. In some cases ECAs also start to engage in untied financing, where they finance foreign entities without direct economic ties to domestic entities to broadly grow the market.	To all countries	Guarantees, insurance, and direct financing to domestic corporations doing business abroad	Typically capitalized institutions, funded from retained earnings
Bilateral development finance institutions (DFIs) (e.g., AFD, JICA, KfW)	Provide financing (primarily debt) to developing countries to meet development needs and fill gaps in capital markets	To developing countries	Market + concessional debt to sovereigns, some private sector lending and equity. Also offer de-risking products including guarantees and political risk insurance.	Capitalized, funded from retained earnings and in most cases market leverage. Also take in subsidies from host governments and other funding sources
Multilateral Development Banks (MDBs) (e.g., World Bank, Asian Development Bank)	Fulfill a role similar to bilateral DFIs, with multilateral governance structures and often different arms serving different segments (e.g., public vs private sector)	To developing countries	Market + concessional debt to sovereigns, separate arms or institutions also provide debt and equity directly to private sector. Also offer de-risking products including guarantees and political risk insurance.	Capitalized, funded from retained earnings and market leverage. Concessional products funded through donor trust funds, some of which are institutionalized and on replenishment schedules.
National Development Banks (NDBs) (e.g., BNDES, China Development Bank)	Provide development finance, primarily for infrastructure, domestically and sometimes bilaterally. Considered in this report given large role in developing countries in infrastructure finance.	Within developing countries, with some bilateral financing as well	Domestic public infrastructure debt financing	Capitalized and funded from retained earnings and market leverage.

### 3.2 Analysis of actors' current climate finance activities

Taking all developing country public flows, (both domestic and international) at a total upper range of USD 204 billion, the table below highlights the top 5 public actors by category type in terms of 2013/2014 climate finance flows.

**As a group, bilateral and multilateral DFIs are the most significant source of flows, along with Governments and agencies providing finance directly.** Climate Funds and ECAs are much smaller in comparison.

**In terms of instruments, there is relatively lower amounts of equity and risk mitigation flows compared to loans.**

In the donor community, governments and agencies focus on grants, however climate funds do provide a significant amount of concessional debt.

*In the DFI community, while multilateral FIs have provided a more varied instrument toolkit across guarantees, concessional loans and market rate loans, bilateral FIs feature as the largest sources of guarantees and concessional loans.*

Table 4: Public climate finance flows over 2013/2014 by actor category (USD millions)

	GOVTS & AGENCIES	ECAS	BILATERAL FI	CLIMATE FUNDS	MULTI-LATERAL FI	NATIONAL FI
Total Billions	28	1	41	4	49	79

Note: in total figures for Bilateral FI, IDFC Group figures of 5bn are excluded, for National FI IDFC Group (56bn) are excluded. IDFC Group is excluded due to unclarity on who the actor is.

Figure 2: Distribution of selected actors use of instruments



Taking the 40 top selected actors that represent 60% of flows, chosen specifically for coverage across geography, the scale of available instruments by actor-type is illustrated in Figure 2.<sup>4</sup>

**70% of flows target mitigation, with public actors prioritizing transport and renewable energy sectors** (Figure 3).

**The largest region receiving flows is Latin America and the Caribbean, followed by South Asia, Sub-Saharan**

**Africa and East Asia & Pacific.** Both the LAC and South Asia flows are dominated by renewable energy and transport which together account for between 71-73% of flows to each region. Flows to Sub-Saharan Africa are more evenly split between renewable energy and agriculture, land use and forestry (AFOLU). Finally, flows to East Asia and Pacific are led by renewable energy at 35% with 14% of flows each going to AFOLU and transport.

Figure 3: Breakdown of uses and sectors of climate finance flows by 40 public actors

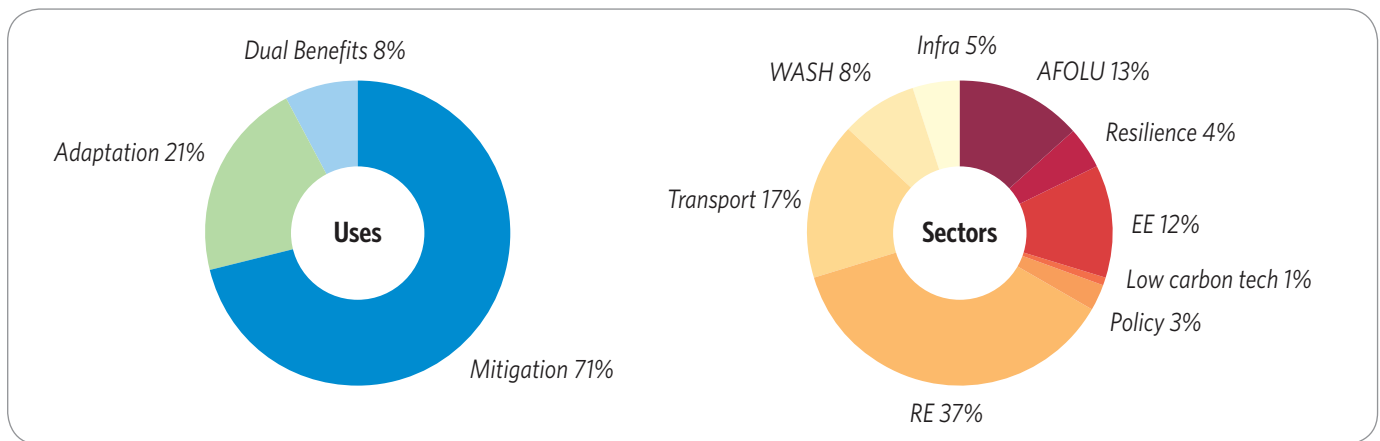
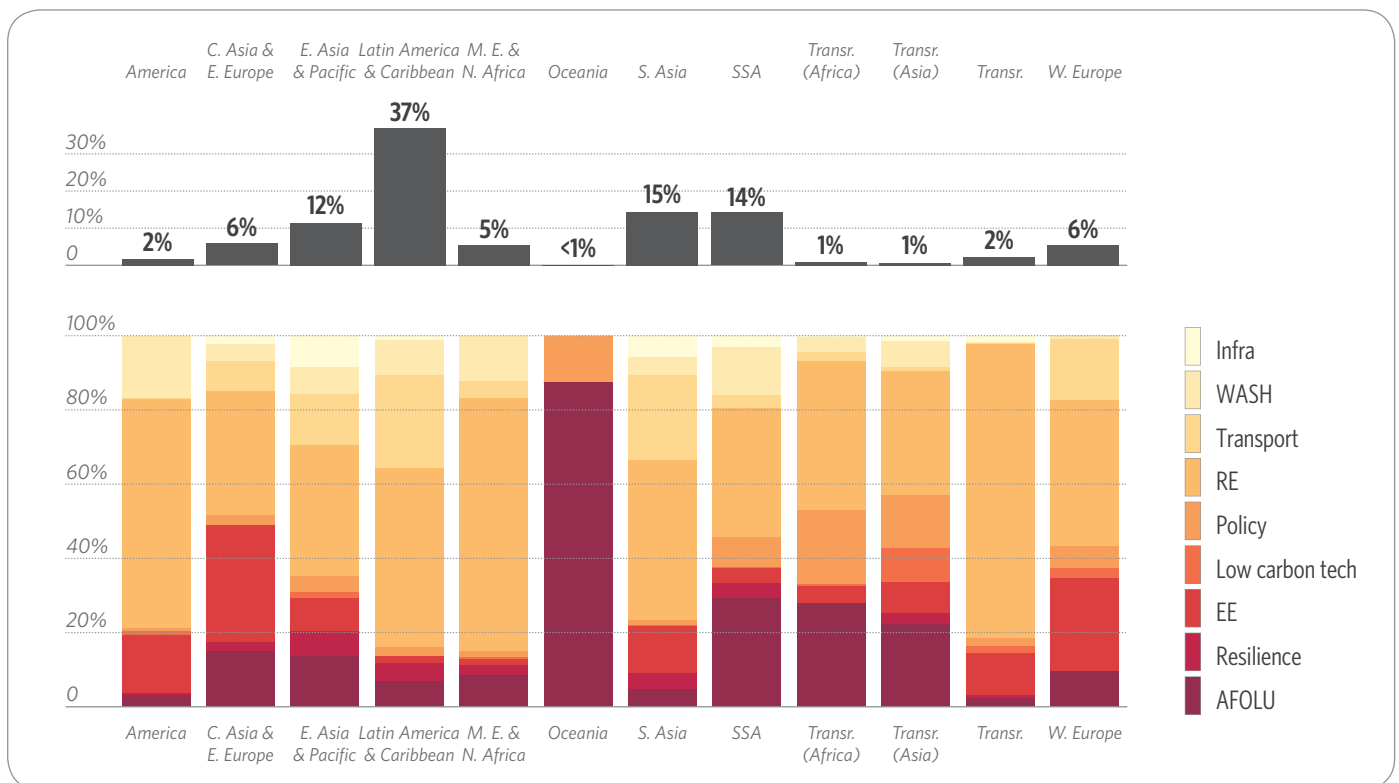


Figure 4: Breakdown of flows to geographic regions by total share (top) and by sector (bottom)



4 We include flows for guarantees from the existing dataset that are not counted in GLCF publications to provide a broader view of public finance activities.

### 3.3 New Trends in International Public Climate Finance

*Existing public finance institutions are setting stretch targets in response to international agreements and optimizing the leverage potential of their balance sheets*

**In anticipation of COP21 and the Paris Agreement, key multilateral development articulated a new set of goals.** to increase the volume of public international climate finance (MDBs 2016):

- Asian Development Bank: Doubling climate finance to USD 6 billion annually by 2020 (own resources only), of which USD 4 billion is for mitigation and USD 2 billion is for adaptation
- African Development Bank: Triple climate financing to reach 40 percent of investments by 2020
- European Bank for Reconstruction and Development: 40 percent of EBRD annual business investment by 2020 in green finance
- European Investment Bank: Global target of greater than 25 percent of all lending on climate finance. Increased target by 35 percent of lending in developing countries by 2020.
- Inter-American Development Bank: Goal to double climate finance to 30 percent of operational approvals by 2020 to an average USD 4 billion per annum, and to improve evaluation of climate risks and identify opportunities for resilience and adaptation measures.
- World Bank Group: A one-third increasing in climate financing, from 21 percent to 28 percent of annual commitments by 2020. If current financing levels are maintained, this would mean an increase to USD 16 billion in 2020.

Separately, many organizations are developing strategies to contribute to the achievement of the

Sustainable Development Goals (SDGs), also agreed in 2015. While only goal 13 (“Take urgent action to combat climate change and its impacts”) focuses specifically on climate change, many have directly connected the potential impacts of climate change with overall development progress and the achievement of many of the SDGs.<sup>5</sup>

**In addition to the new finance and development goals, organizations are focusing on increasing the amount of leverage they absorb to bolster their capacity to finance new development projects.** The Asian Development Bank (ADB), for instance, has moved to dramatically expand its lending capacity to poor countries which are likely to lack access to DFI instruments and toolkits, discussed in the previous chapter. By dramatically expanding its potential to leverage, it aims to unlock a vastly increased pool of overarching finance for development in these same countries. Specifically, it has combined the lending operations of its Asian Development Fund (ADF) — which originally provided concessional loans for projects in poor countries (as opposed to ADB loans that provided market-rate loans to middle-income countries) with its ordinary capital resources (OCR). When it took effect in January 2017, its OCR equity tripled to approximately \$49 billion from less than \$20 billion before the merger. Taking co-financing into consideration, ADB estimates that annual assistance to poor countries may reach as high as \$40 billion in coming years — up from \$23 billion in 2014 (this represents up to a 40 percent increase in ADB’s own financing).

Another institution that has recently innovated its leverage capacity is the International Development Association (IDA), part of the World Bank Group. In its most recent replenishment, the Board agreed to a strategy in which IDA will be able to access capital markets for the first time to finance its activities. This agreement was accompanied by AAA credit ratings from two ratings agencies. IDA estimates that this will increase leverage of donor resources to \$3 of IDA finance for every \$1 of donor resources. As the replenishment process also identified the importance of tackling climate and development “in an integrated manner,” IDA estimated that financing, particularly for climate adaptation, would “increase substantially” (IDA 2017).

5 The World Bank, in its Turn Down The Heat series of publications, notes the potential for climate change to reverse decades of progress on reducing poverty. UNDP (2016) has noted the risks that climate change poses across its development portfolio, and specifically how climate change affects the achievement of each of the SDGs.

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*Important new development finance institutions have emerged in the AIIB and NDB committing to climate finance mandates, and the Green Climate Fund committing USD 1.5 billion in two years.*

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- As newly established DFIs, the banks aim to simplify procedures and cut administrative costs compared to existing banks, provide flexible lending terms to accommodate developing countries' needs, and commit to high operational standards with regard to environment safeguards and climate considerations in order to build a positive image in the international community.
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**The Asian Infrastructure Investment Bank (AIIB) and New Development Bank (NDB) are newly established multilateral development banks led by developing countries, recently committed to climate finance mandates.**<sup>6</sup> AIIB's mandates include building a "Lean, clean, and green" organization – of which "Green" means an institution built on respect for the environment. The Bank aims to assist clients in achieving their nationally determined contributions, including through mitigation, adaptation, finance, technology transfer and capacity-building.

The NDB has dual mandates of promoting infrastructure investment, and supporting sustainable development. The bank has started to engage in the climate sector in practice, with the first set of four approved loans totaling \$811 million, all in the renewable energy sector.

The ambitions of these banks, if realized, present new opportunities for climate finance.

- Both banks' have large pools of initial authorized capital (~USD 100 billion)<sup>7</sup>, and focus on large infrastructure projects. They will provide finance in areas where existing banks such as ADB and WB would not normally enter, potentially increasing the scope of RE coverage.

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*With over \$10.3 billion in commitments, the Green Climate Fund (GCF) has emerged as the largest multilateral climate fund by total committed assets.*

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As an operating entity of the financial mechanism of the UNFCCC, the GCF provides support to developing countries on both their mitigation and adaptation goals, while simultaneously measuring co-benefits such as environmental, social, economic, and gender diverse progress.

The GCF has committed nearly \$1.5 billion through three cycles over the past two years, out of the \$10.3 billion that the fund intends to commit to projects through 2019. Most of the existing project value (over 50 percent of total committed value) have been committed to either transregional projects or projects located in Latin America and the Sub-Saharan Africa (see Annex for full details). To date GCF investments have been concentrated in renewable energy generation, enhancing the resilience of agriculture and the built environment, and dual benefit/cross-sectoral projects.

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6 AIIB was formally established in 2016 to complement and cooperate with existing MDBs to fulfill infrastructure and other productive sectors' investment needs in Asia. There are currently 75 member countries. The NDB was created in March 2013 by Brazil, Russia, India, China, and South Africa. The bank is established as a response to the underrepresentation of the BRICS countries in existing international financial institutions.

7 Authorized capital is the amount of capital stock that an MDB is allowed to issue to its members. Most of the authorized capital is issued to members, and is termed as subscribed capital. Both AIIB and NDB are fairly large in scale - By comparison, IBRD's total subscribed capital in 2016 is around \$263 billion.

### 3.4 Comparative Strengths for International Public Actors in meeting climate finance needs

International public actors face internal and external constraints to increasing climate finance. In this section, we look at the way that governance and mandates,

business models, and strategic direction distinguish and differentiate how the international public actors currently meet climate finance needs. This is based on detailed analysis of 31 key actors across each of the actor groups (see Section 3.1 for list) as well as the literature.

Table 5: Summary of international public climate finance actors comparative constraints and strengths

	BILATERAL AID AGENCIES	MULTILATERAL CLIMATE FUNDS	EXPORT CREDIT AGENCIES	BILATERAL DFIS	MULTILATERAL DEV'T BANKS	NATIONAL DEV'T BANKS
Risk Appetite						
Strong Climate Mandate						
Nimble decision making						
Financially independent & sustainable						

Note: Actors presented in order of decreasing risk appetite. Full circle symbolizes high score, half-circle moderate, empty circle low

#### 3.4.1 BILATERAL AID AGENCIES

**Bilateral aid agencies are distinguished by their ability to take on risk due to the predominantly grant nature of their funding.**

Grants from these organizations are increasingly deployed in climate finance to fund first-of-their-kind initiatives,<sup>8</sup> to experiment with new financing mechanisms such as results-based payments,<sup>9</sup> and to complement investment focused initiatives through technical assistance to build project pipelines and improve enabling environments.<sup>10</sup>

	BILATERAL AID AGENCIES
Risk Appetite	
Strong Climate Mandate	
Nimble decision making	
Financially independent & sustainable	

**The focus of many bilateral aid agencies on the poorest and most vulnerable countries allows for meeting both development and climate needs.**

In particular, countries below investment grade have fewer choices for financing; bilateral aid agencies play an important role in targeting finance that is intended to achieve development and climate aims. Many countries have a multi-divisional or multi-agency decision process with respect to climate financing that allows multiple objectives to be met within projects.

**Some bilateral aid agencies have developed very clear prioritizations that allow them to concentrate their resources for maximum impact.** For example, the Norwegian government has focused on forests and countries with high forest cover, while AUSAID focuses on resilience and countries in its region.

**At the same time, because of their single-country governance and reliance on grants, bilateral aid agencies are susceptible to shifts in domestic priorities and resource availability.** As an example, German institutions are facing competition for ODA resources from domestic needs in managing the refugee crisis (OECD 2016).

8 See Global Innovation Lab for Climate Finance  
 9 For example, the International climate and forest initiative (NICFI) managed by Norad  
 10 For example, the Africa Clean Energy Finance Initiative (ACEFI) funded by U.S. State

### 3.4.2 MULTILATERAL CLIMATE FUNDS

**Multilateral climate funds (MCFs) benefit from the strong credibility and buy-in associated with having a multilateral, consensus-based governance structure.**

As the primary MCFs (GEF, GCF) are also accountable to the UNFCCC Conference of the Parties (COP), this provides another layer of legitimacy and transparency that bilateral organizations do not benefit from. Periodic replenishments also provide all member countries the opportunity to weigh in on strategy and administrative concerns.

	MULTILATERAL CLIMATE FUNDS
Risk Appetite	
Strong Climate Mandate	
Nimble decision making	
Financially independent & sustainable	

**As providers of grant-based and concessional funding, they are able to fund innovative initiatives.** Whether the focus is on pilot initiatives (GEF), or on scaling up promising solutions (GCF, CIFs), MCFs are able to fund riskier projects that other institutions can't, including in the poorest countries.

**As multilateral institutions, they aggregate resources to achieve greater impact and amplify messages.**

Given their wide reach, MCFs serve an important role as thought leaders and knowledge managers in advancing climate change mitigation and adaptation.

**MCFs are, however, limited by donors' individual and collective abilities to increase grant funding.** Similar to bilateral aid agencies, they are reliant on grant funding, which is in turn susceptible to politics. Beyond this, MCFs are also limited by historical contribution shares: some donors are reluctant to change individual shareholdings despite, in some cases, having the possibility of providing additional financing.

**MCFs are also constrained in decision-making by extensive and varied donor requirements, as well as by 3 to 4 year replenishment strategies that prevent**

**mid-replenishment pivoting.** With many overseers with varying priorities, MCFs have extensive reporting requirements and may feel constrained in their ability to practice adaptive management in response to changing circumstances on the ground.

### 3.4.3 EXPORT CREDIT AGENCIES

**ECAs offer a suite of low-cost financing as well as de-risking products, such as political risk insurance and guarantees, that can lower the total cost of a climate finance investment.**

Sovereign guarantees increase ECAs' credit ratings and reduce financing costs and risks. Some ECAs obtain substantial amount of funding from the government instead of the capital market, which all contribute to the reduction in lending rates, and could benefit the climate sector. The OECD Agreement on Export Credit has allowed for generous terms and conditions to be provided for renewable projects, and has also reached agreement recently to not provide export credits to coal.<sup>11</sup>

**In response to changing market dynamics, some ECAs have responded by offering "one-stop-shopping" to projects seeking financing.** Support provided may come from multiple domestic institutions and include not only trade finance but also investment support to the project, untied support to market development, and commercially priced lending. This type of approach has grown especially prevalent in the Japanese, Korean, and Chinese ECAs (EXIM 2015).

**ECAs for the most part do not have their own climate finance targets, rather aligning themselves with national strategies.** This can increase volatility of climate financing and also reduce the internal focus on climate finance.

	EXPORT CREDIT AGENCIES
Risk Appetite	
Strong Climate Mandate	
Nimble decision making	
Financially independent & sustainable	

<sup>11</sup> OECD's Arrangement on Export Credits is developed to provide a framework for the orderly use of officially supported export credits. The Arrangement is a "Gentlemen's Agreement" amongst most OECD members, and sets maximum concessional supports ECAs are allowed to provide to each type of project, so that other ECAs can stay competitive and avoid a race to the bottom. The OECD views the arrangements as "rules" defining constraints on members' lending activity. However, in recent years, the proportion of ECA financing covered by the OECD Agreement has gone from 100% in 1999, to 34% in 2014 (EXIM 2015).

### 3.4.4 BILATERAL DEVELOPMENT FINANCE INSTITUTIONS

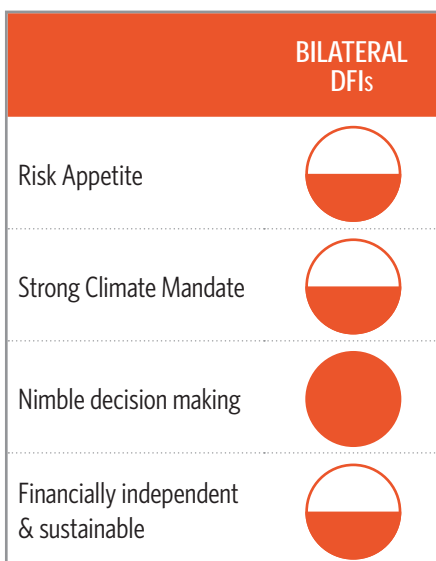
**Bilateral development finance institutions (BDFIs) benefit from being relatively independent financial institutions with a single national shareholder.**

This allows them to align their financing with national priorities and execute strategy changes and financing relatively flexibly. At the same time, having a single shareholder leaves them exposed to political shifts.

**The balance sheets of most BDFIs are backed either implicitly or explicitly by their country of origin.** This allows BDFIs to offer favorable financing terms based on sovereign credit ratings rather than that of their own institution. Since BDFIs have a development focus, their financial sustainability is partly based on government subsidy for concessional lending, particularly to the poorest and most vulnerable countries.

**BDFIs can take advantage of specialized skillsets within their own countries to offer highly specialist technical expertise to recipient countries.** For example, Japan, a world leader in disaster risk management, combines sovereign lending with scientific technical cooperation via JICA.

**Despite their sovereign backing and strong track records, several bilateral DFIs are operating very conservatively, with very low leverage and flexibility in product offerings.** For example, OPIC, despite a decades long track record of returning profits to the U.S. Treasury, is not permitted to borrow from markets, other than for cash flow financing, and is only able to participate in debt financing transactions (CGD 2013, 2015). JICA has extremely low leverage (capital ratio of ~80%) despite strong backing from the Japanese government (JICA 2017).



### 3.4.5 MULTILATERAL DEVELOPMENT BANKS

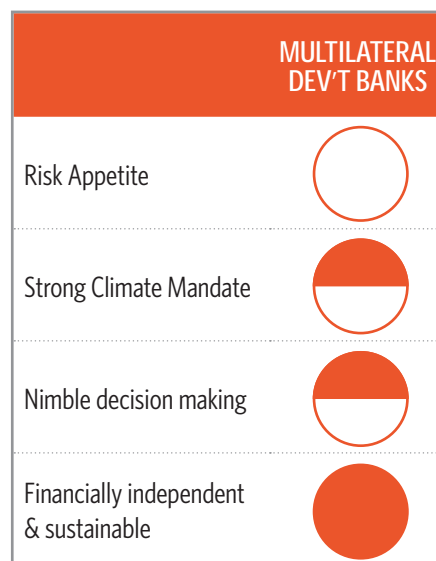
**MDBs' project portfolios present high relevance for climate support.**

MDBs focus on ensuring global/regional economic growth, and infrastructure improvement is often among their top priorities and is highly relevant to the climate sector. Mainstreaming efforts are key

for strengthening the climate focus vis-à-vis the broader development focus of MDBs. Most MDBs have (i.e. IFC) set quantitative climate finance goals to be reached within a few years, usually a quantitative target (percentage increase or dollar amount increase in total financing) in the climate sector. Some banks have also established specific climate action plans.

**MDBs' strong financial performances provide the foundation for increased climate support.** MDBs often have diversified member bases, which contribute to their good financial performance by providing adequate capital and lowering the portfolio concentration risks. Their financial performance is also enhanced by lower-than-market borrowing costs, and prudent management practices including conservative leverage and liquidity limits.





**While the World Bank and the largest regional development banks have made significant progress in setting climate finance targets and mainstreaming, newly established MDBs and smaller regional development banks have room for growth.** These new and smaller institutions often lack the experience, resources, and technical know-how to expand climate actions. Although these banks have included mandates to fight against climate challenges, they often lack dedicated credit lines for climate engagements, and do not have measurable goals to evaluate progress.





### 3.4.6 NATIONAL DEVELOPMENT BANKS

**NDBs are distinguished by their alignment with domestic development policy and priorities.** NDBs are created to serve domestic development goals for the country. Their target clients are mainly domestic; they serve foreign clients only if they benefit domestic

NATIONAL DEV'T BANKS	
Risk Appetite	
Strong Climate Mandate	
Nimble decision making	
Financially independent & sustainable	

development, or are relevant to the broader state policy. As such, NDB investments in infrastructure and other climate-relevant sectors can have very strong long-term sustainability due to country ownership. In recent years, stronger country commitments to climate and sustainability, including through Nationally Determined Contributions (NDCs), have been reflected in increased financing in these areas (see CPI 2017 forthcoming).

**Of the actor groups studied, NDBs have the largest climate financing flows given their large balance sheets and domestic responsibility for infrastructure financing.** There is a strong potential to further align NDB mandates with low-carbon climate resilient development and catalyze greater financial flows (see CPI 2017 forthcoming).

**Yet NDBs often have inadequate access to capital, including lower-cost finance, and lack of risk mitigation instruments** (see CPI 2017 forthcoming). In combination, these constraints may reduce the attractiveness of climate investments vis-à-vis investments in other sectors.

### 3.5 Common tensions facing actor groups in providing more and better climate finance

**Perceived or real trade-offs between development, climate, and profitability:** Development and climate, while sometimes aligned, may not always be. For example, the largest greenhouse gas emitting developing countries are not the poorest countries that

arguably need more development aid. This debate has played out in particular in discussions of energy access and coal power financing in the context of MDB and bilateral DFI energy and climate policies (cite: Sierra Club papers on this, also CGD discussion of OPIC)

Development and climate align most readily in climate adaptation, as the poorest countries are often most vulnerable to changes in climate, due to existing fragility and typically higher dependence on natural resources.

Development finance institutions have further reported tensions between development and profitability. This also affects climate finance as grant and concessional funding is increasingly targeted towards the poorest and most vulnerable countries, which, as above, are likely to have lower climate change mitigation potential (heavily forested countries are an exception).

**Difficult to balance financial prudence with needs:**

For some financial institutions, possibly over-prudent financial discipline limits potential to increase climate financing. For example, some bilateral DFIs and MDBs have very high ratios of shareholders equity to debt, or are not permitted at all to borrow from markets to finance either short-term or long-term debt.

At the same time, other financial institutions have suffered from lack of discipline, or have a high proportion of borrower membership that pressures credit rating. For example, some NDBs are often entirely owned by their national government, and domestic policy goals can take priority over financial prudence. In recent years, the China Development Bank and Development Bank of South Africa have both extended a large amount of lending to under-performing state-owned companies, municipalities, and strategic sectors, which resulted in high levels of non-performing loans. CDB went through a restructuring process in the late 1990s and early 2000s that significantly strengthened its financial performance,<sup>12</sup> and DBSA is currently under a multi-year restructuring process as well (Downs 2011).

**Lack of capacity and technical know-how:** Many developing country institutions have not yet adopted harmonized climate accounting, climate finance targets, or mainstreaming, often as a result of lack of capacity and technical know-how.

In the MDBs, the sunseting of the CIFs risks loss of know-how in the MDBs, whose climate activities have been significantly supported by the availability of concessional finance.

12 [https://www.brookings.edu/wp-content/uploads/2016/06/0321\\_china\\_energy\\_downs.pdf](https://www.brookings.edu/wp-content/uploads/2016/06/0321_china_energy_downs.pdf)

**Use of grants not always aligned with risk-taking and innovation:** Although grants are often raised as a solution to lack of risk capital, in practice they are not optimally deployed for taking risk. This is due to several factors:

- Pressure for results: even though grants and other de-risking instruments do not have to meet profitability considerations, they can be subject to significant oversight that can increase the risk aversion of the deploying institutions (OECD 2017, SSIR 2013, Azoulay et al 2010).
- Administrative complexity: Even if grants are available for risk-taking purposes, it can be difficult to align typical public due diligence processes and transparency requirements with those of the private sector (WEF 2015). New initiatives, such as Norway's results-based payments commitments under its Climate and Forestry Initiative, may require significant administrative changes, delaying implementation (NORAD 2014).
- Organizational capacity: New innovations typically require staff availability and skills that can take on development of new processes. Yet, in some institutions, hiring processes and skills development are not aligned with the institution's needs (OECD 2016b, WEF 2015).

**Competition between organizations, unless managed effectively, can crowd out private sector and lead to lowest common denominator environmental and social safeguards...**

While in some cases, competition between actors may be appropriate for driving innovation and providing choice, in others, common standards are important to reduce the "race to the bottom" effect. This is particularly true with environmental and social safeguards, as well as subsidization. For example, the OECD Agreement for ECAs was intended to provide common standards regarding interest rates and loan tenors in different sectors, to reduce over-subsidization of trade finance. Similarly, some MDBs have put in place standards to determine when blended commercial-rate and concessional finance is appropriate, and when it constitutes over-subsidization. With respect to environmental and social safeguards, while some recipient countries in particular have argued that the current standards at the predominant MDBs are too onerous and translate to long project cycles, many developed country actors and civil society members fear that new institutions such as the New Development

Bank and the Asian Infrastructure Investment Bank will offer a substitute for MDB financing with potentially substantially fewer safeguards in place.

**...While coordination entails trade-offs with efficiency.**

In theory, coordination among international public actors is useful to ensure lack of duplication of efforts and to help build scale of efforts. However, because institutions have different procurement processes, reporting requirements, and cultures, in practice coordinating closely at project level can be challenging, and the rationale for it needs to be justified.

Beyond the project level, coordination can also be achieved through country-level strategy development by national governments (such as Nationally Determined Contributions and their supplemental policies) that help international actors define and act upon their comparative advantages in line with the national strategy.

Bilateral aid agencies from OECD countries also coordinate via the OECD Development Assistance Committee (DAC). DAC has established a monitoring framework that includes a number of indicators for more effective development cooperation, including the use of country-led results frameworks and systems, transparency, multi-stakeholder participation and dialogue, and predictability of assistance (OECD/UNDP 2016).

### 3.6 Opportunities in scaling climate finance

In our review of international public actors in climate finance, we identified a number of opportunities for more and better climate finance. Many of these opportunities are based on identification of best practices in certain institutions that have not yet been adopted across the board. These opportunities need to be considered in light of the internal and external threats identified in Section 3.5, and appropriate strategies developed that target these opportunities effectively.

**Stretch organization-wide climate finance targets.** The regional MDBs and World Bank in particular have set ambitious climate finance targets that are intended to drive climate action across the organization – not just in the climate business group. Yet many institutions, including subregional MDBs, some bilateral DFIs, national banks, and ECAs, have not yet set climate finance targets. Many national institutions point to their support of their national government's targets, yet for

driving internal action we see value in organizations having their own targets.

**Take advantage of innovative, yet prudent, opportunities to access capital markets for additional finance.** Recently, we have seen both IDA and the ADB expand their leverage capacity through prudent measures. Yet in our review of international public actors, we noticed a number of institutions, notably several bilateral DFIs, which had significantly lower leverage than their peers.

**Work across government and private sector arms and teams to unlock investment by supporting enabling environment reform.** Many barriers to private investment are the result of poor policy environments. Several recent innovations have focused on coupling enabling environment reform with immediate opportunities to increase private sector investment. For example, IFC's Scaling Solar initiative in Zambia helped the government to develop an auction for renewable energy that de-risked bids by standardizing contracts and PPAs, identifying sites, and managing social and environmental risks in advance of the auction. The auction resulted in the lowest ever African solar power prices (Myers 2016).

**Allow for innovation through organizational design.** Some institutions, such as IFC, have designated groups in their climate departments that are focused on seeking out new business models that can help their industry units meet climate finance targets effectively. Others, such as the Global Environment Facility, set targets that are intentionally below 100 percent for long-term sustainability, so as to recognize that some projects will fail if innovation is truly occurring.

**Increase flexibility in product offerings.** Some institutions are artificially restricted from offering certain products even if they are most appropriate to advance development and climate aims and are financially prudent. For example, OPIC in the U.S. is only allowed to offer debt financing despite opportunities in equity and de-risking (CGD 2013, 2015). Other institutions, notably ECAs, have been very innovative in their offerings in response to market opportunity and are seeing such efforts pay off in terms of increasing business (EXIM 2015).

**Offer de-risking instruments, including blended finance and guarantees.** In face of challenging operating environments including adverse macroeconomic trends and tightening financial regulations for development finance institutions, EBRD deploys "blended finance"

operations, where it combines loans it offers in commercial financing terms with grants or other types of concessional finance, often co-financed from partner finance institutions. This allows greater access to finance at low costs, while ensuring the efficient use of public finance. The "blended finance" operation is included in bank's Financial Sector Strategy 2016-2020, as a key activity to achieve the strategic objectives (EBRD 2016).

Guarantee instruments are also widely used by development finance institutions to promote private financing in borrowing member countries by covering risks that the private sector is not able to absorb (CDB 2012). It helps to crowd in private finance and can target specific classes of risks (ODI 2014). For example, for ADB, the majority of guarantees are covering loans in local currency, and a large share of guarantees is in the infrastructure, particularly electric power generation sector, corresponding to its large share of loans in the sector. ADB is also exploring innovative ways to utilize guarantee instruments more efficiently. One experiment is to reinsure its guarantee products, and move the guarantees off its portfolio to third party insurers. Although this increases costs, it would release financial resources for more transactions (ODI 2014).

**Mainstream climate finance across operations, including financial sector development activities.** As noted in Section 3.2 regarding the Sustainable Development Goals, development and climate change can no longer be considered mutually exclusive activities. Institutions that have yet to mainstream climate change mitigation and adaptation (through, e.g., scoring of all projects), could develop this type of process. Organizations that have already developed basic mainstreaming could extend this work further: in particular, our systems analysis identified that, while many organizations have adopted mainstreaming at the project level, a significant gap persists in terms of helping to develop "green" domestic financial systems in developing countries in conjunction with broader financial systems development activity.

## 4. Conclusions and recommendations: Opportunities for accelerating climate finance in light of needs, comparative strengths, and systemic considerations

Optimizing the use international sources of public climate finance requires recognition of existing and emerging actors inherent constraints, the capacity and needs of developing country systems to absorb finance, and a long-term view of how circumstances change in uncertain economic and political environments.

Figure 5 overleaf provides a graphic overview of needs and gaps drivers across developing countries, against the drivers of public finance actor perspectives.

- While specific systems and needs are best evaluated on a country by country basis; short-termism, growing risks and volatility are prevalent across developing country financial systems, impacting currency risk evaluation and potential public support for climate policies.
- Access to finance, the costs of and suitability of current financial products and lack of tools and methods to enact low carbon and climate resilient projects remain the key barriers to climate finance growth. Political and policy risks in the domestic environment are also cited as a key barrier to address in supporting private finance solutions.
- The most prevalent instruments and solutions identified include blended or structured finance vehicles, utilising concessional finance; de-risking instruments such as guarantees or insurance; the provision of open data and tools to manage uncertain risks; and policy support and technical assistance to guard against political risks.

However, while such solutions are commonly called for, delivering them at scale require some of the major public finance actors in climate finance to adapt and change business models.

International Public Actors have been constrained by:

- Perceived trade-offs in meeting multiple mandates on poverty alleviation, development and climate change, creating silo effects within organisations and budget lines.
- Over-prudence in leveraging capital against healthy balance sheets. While recent efforts have leveraged greater amounts of capital,

current risk ratios by some actors, particularly bilateral development banks are over-prudent.

- Lack of linkages on use of grant capital combined with domestic policy or enabling environment risk reduction due to time-poor procedures, political pressures or lack of innovation culture in some institutions. This constraint may be reinforced by sources of concessional capital being bottlenecked in key 'connector' institutions such as for example, the GCF.

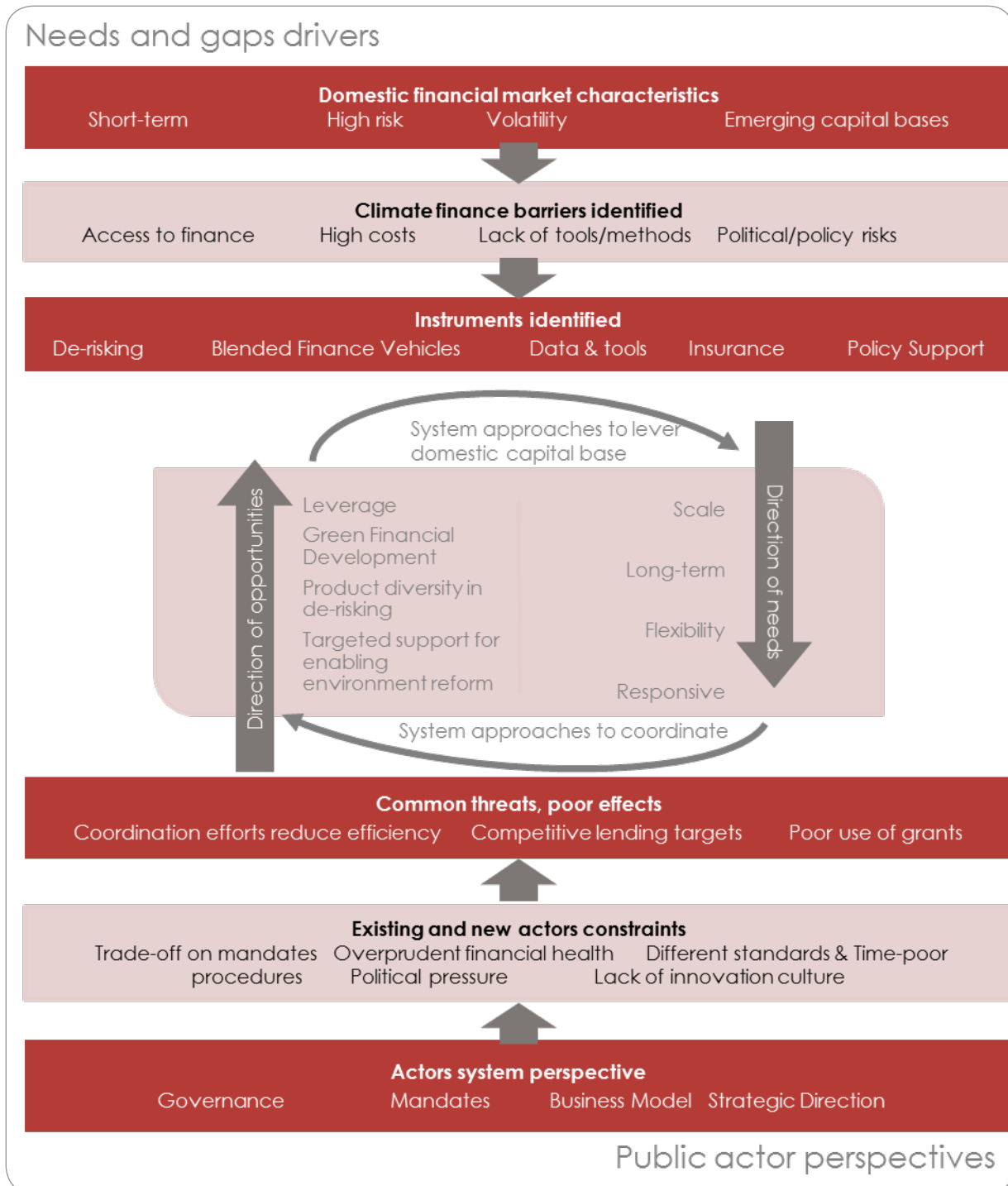
International Public Actors are best positioned to:

- Scale up blended finance and risk mitigation instrument offerings in line with a more flexible capital raising strategy.
- Harmonize existing procedures and standards, including through coordination with new institutions. AIIB and NDB, as well as sub-regional and smaller national development banks, can learn from MDBs to set targets, harmonize accounting, and mainstream climate into their existing product lines.
- Shift climate finance modes from project finance focus to financial system development focus. So far, there is little effort to support mainstreaming of climate change into financial system development activities; most climate activities have focused on project finance. The accompany working paper illustrates how broader system actors may impact the effectiveness public climate finance flows through:
  - » new regulatory actions for banks and the domestic institutional investments,
  - » increased information flows through disclosure on ESG risks from service providers, and
  - » new mandates for green debt and equity investments by investors

In light of not only the scale of climate finance needs, but also the type of public finance instruments needed to leverage private flows, the importance of more connected coordination and collaboration by

international public climate finance actors is crucial. Systems thinking approaches support the recognition of existing and new actors effects on scaling overall flows, their direction of travel, and supports the collective optimisation of public finance interventions to achieve the scale needed.

Figure 5: Overview of key needs and solutions in coordination and collaborating on climate finance delivery



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## 6. Annexes

### Normalising the landscape data

The landscape results focus on the average of an upper and lower bound range (lower, additional) dictated by relevance to climate finance by OECD CRS markers.

Across 2013 and 2014, this range was 725 – 743 billion which averages out at 734 billion in total and 367 billion annually and that is reported in the updated BA report climate finance flows diagram.

Flows to and within developing countries (classified as all flows, excluding high-income countries), amount to annual average of 203bn or 55% of total.

Public flows to and within developing countries amount to an annual average of 94bn or 46% of all developing country flows. This compares slightly higher to public flows at 40% of total Landscape.

International public flows to developing countries stand at an annual average of 53bn or 56% of all public flows, with the rest provided by domestic government agencies and financial institutions.

Risk mitigation instruments such as guarantees are excluded from the landscape. Including these instruments in the total increases the annual average to 97bn of which 56bn is international flows.

Details are in the table below.

Table 6: Green Climate Fund investments 2015-2016

	2015	2016
<b>Total Investments</b>	<b>\$168 million</b>	<b>\$1.32 billion</b>
<b>BY GEOGRAPHY</b>		
Central Asia and Eastern Europe	-	\$39 million
East Asia and Pacific	\$95 million	\$183 million
Latin America and the Caribbean	\$28 million	\$325 million
Middle East and North Africa	-	\$39 million
South Asia	-	\$75 million
Sub-Saharan Africa	-	\$278 million
Transregional	-	\$378 million
<b>BY INSTRUMENT</b>		
Grant	\$128 million	\$569 million
Project-level equity	\$20 million	\$126 million
Low-cost project debt	-	\$623 million
Guarantees	\$20 million	-
<b>BY SECTOR</b>		
Mitigation	\$22 million	\$485 million
Agriculture, forestry, land-use, and NRM	-	\$41 million
Energy efficiency	-	\$42 million
Renewable energy generation	\$22 million	\$402 million
Adaptation	\$115 million	\$314 million
(Other) disaster risk management	\$12 million	-
Agriculture, forestry, land-use, and NRM	-	\$95 million
Coastal protection	-	\$36 million
Infrastructure, energy, and other built environment	\$40 million	\$111 million
Others / cross sectoral	\$8 million	\$50 million
Water and wastewater management	-	-
Dual benefits	\$31 million	\$517 million
Agriculture, forestry, land-use, and NRM	\$6 million	\$122 million
Others / cross sectoral	-	\$378 million
Renewable energy generation	\$25 million	\$17 million



Table 7: Breaking down flows data to and within developing countries

LANDSCAPE BREAKDOWN	CONTROLS	LOWER	UPPER	AVERAGE	ROUNDED AVERAGE	ANNUAL AVERAGE	ROUNDED ANNUAL AVERAGE
Headline BA	Lower and Additional	725234.5375	743592.244	734413.3908	734	367206.7	367
Developing country only	Lower and additional	396099.5371	414435.0308	405267.2839	405	202633.6	203
New developing country public flows	Lower and Additional	178946.4179	197281.9116	188114.1648	188	94057.08	94
of which international public flows		95841.60717	114177.1008	105009.354	105	52504.68	53
Developing country public flows	Lower and Additional, plus exclusions 'guarantees'	185368.6296	203704.1232	194536.3764	195	97268.19	97
of which international public flows		102263.8188	120599.3124	111431.5656	111	55715.78	56

Source: Buchner et al 2015, 2016