CLIMATE POLICY INITIATIVE

Measuring the Private Capital Response to Climate Change: a proposed dashboard

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About CPI

With deep expertise in finance and policy, CPI is an analysis and advisory organization that works to improve the most important energy and land use practices around the world. Our mission is to help governments, businesses, and financial institutions drive economic growth while addressing climate change. CPI has six offices around the world in Brazil, Kenya, India, Indonesia, the United Kingdom, and the United States.

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1. Introduction

Private capital flows will dictate our success in responding to the climate challenge

The Intergovernmental Panel on Climate Change's (IPCC) *Special Report on Global Warming of 1.5 °C* found that up to USD 3.8 trillion in annual investment in the energy supply system alone is required between 2016 and 2050 to limit global warming to 1.5°C (IPCC 2018). This is equal to approximately the combined total investment across all sectors in Japan, Germany, and India in 2017 which are the third, fourth and fifth largest economies in the world respectively (IMF 2019)[1]. In order to meet international climate goals, there is a collective challenge to "shift the trillions" in private capital to help drive the transition to a zero carbon, climate-resilient economy. Public sources of finance will not be able to meet this demand on their own.

As more initiatives among the business and investment community strive to ensure that their climate actions align with the Paris Agreement, in particular Article 2.1 (c) on "making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development," tools will be needed to track overall progress against this ambition.

This brief, which is part of CPI's work on tracking global climate finance flows, proposes a preliminary methodological approach and analytical framework to measure the nature and speed of shifts in private capital in response to climate change. It also outlines a way to present this information in a dashboard format, based on initial scoping of current publicly available data and methods completed in partnership with the European Climate Foundation in 2018. The approach could be developed further using proprietary data sources. Following the development of this preliminary methodology, CPI will consider options to develop the dashboard concept further, in collaboration with peer analytical organizations and data providers, with a view to implementing a version of the dashboard that would be most useful in tracking and influencing the private capital response to climate change.

Why create a dashboard to capture the private capital response?

Aggregating and publishing periodic progress measurements on the nature and speed of the shift in private capital to help drive the transition to a zero carbon, climate-resilient economy, in a 'dashboard' would ideally provide market participants, including both private capital investors (particularly institutional investors) and intermediaries, with:

- An accessible, at-a-glance overview of systemic progress;
- Insight into how their own market segment is performing (e.g. banking, insurance, listed equities, bonds);
- The ability to gauge whether their actions are sufficient to meet performance thresholds.

A dashboard reflecting the private capital response to climate change could be presented in a variety of ways according to need. These might include a public-facing visual dashboard on an external website accompanied by a downloadable data file; or an internal non-public dashboard for staff to make use of as an analytical resource (for research organizations), as the basis for campaign design and messaging (for advocacy organizations), or for resource allocation (for foundations).

In summary, a dashboard approach can support the advocacy and philanthropic communities, as well as analysts and service providers, seeking to mobilize non-state actors around the climate action agenda with an open-source tool to identify and report on market trends, and target interventions to increase the speed and effectiveness of capital reallocation.

The remainder of this brief is structured in three parts:

» Approach: the proposed scope and framework structure of the dashboard

» The dashboard: proposed aggregate indicators, detailed indicators and data sources

» Implementation challenges: the main limitations in applying the proposed dashboard approach and potential mitigation strategies

1 Taking gross fixed capital formation as investment in the given countries (IMF 2019. International Finance Statistics; authors calculations).

2. Approach

This section of the brief presents the proposed scope and framework structure of the dashboard.

2.1 Context: Private capital flows in an ecosystem of actors, services, and rules

The two aspects important for measuring the response in private capital are:

1. the nature of the shift (how it is happening?), and;
2. the speed of the shift (is it happening fast enough?).

The traditional view in understanding the role of private capital in climate change has been to focus on infrastructure investment – investments that typically directly result in emission reductions and climate resilience through, for example, deploying renewable energy projects, greener buildings, or flood defense. This has been the focus of CPI's Global Landscape of Climate Finance series since 2011. These investments, by their nature, typically involve equity financing provided by government agencies, corporations, or specialized funds, and debt finance from commercial banks.

However, the availability of capital to invest is directly linked to capital markets, where green finance has emerged as a major theme in recent years. In addition to commercial and investment banks, capital markets engage large institutional investors – such as pension funds and insurance companies – and fund managers allocating capital across bond and stock markets. While these market actors rarely finance new projects individually, they are major players in deciding how capital is allocated through capital markets to project developers and the banks that lend to their projects. The flow of capital is facilitated through trading platforms, such as stock exchanges, and credit rating agencies and index providers for essential services that shape allocation decisions. While many will be familiar with capital market instruments like green bonds, sustainability linked loans, sustainable stock exchanges, fossil free funds, and low-carbon indices, these are just some of the avenues available to private capital in responding to the climate challenge. These overall elements are part of an ecosystem channeling capital flows, and consequently are an integral part of any comprehensive assessment of 'shifting the trillions.'

Thus, in addition to capturing financial allocation decisions, any assessment of private capital response should also capture internal policies, business models, and risk management strategies adopted by market actors that are in line with climate-related aims.

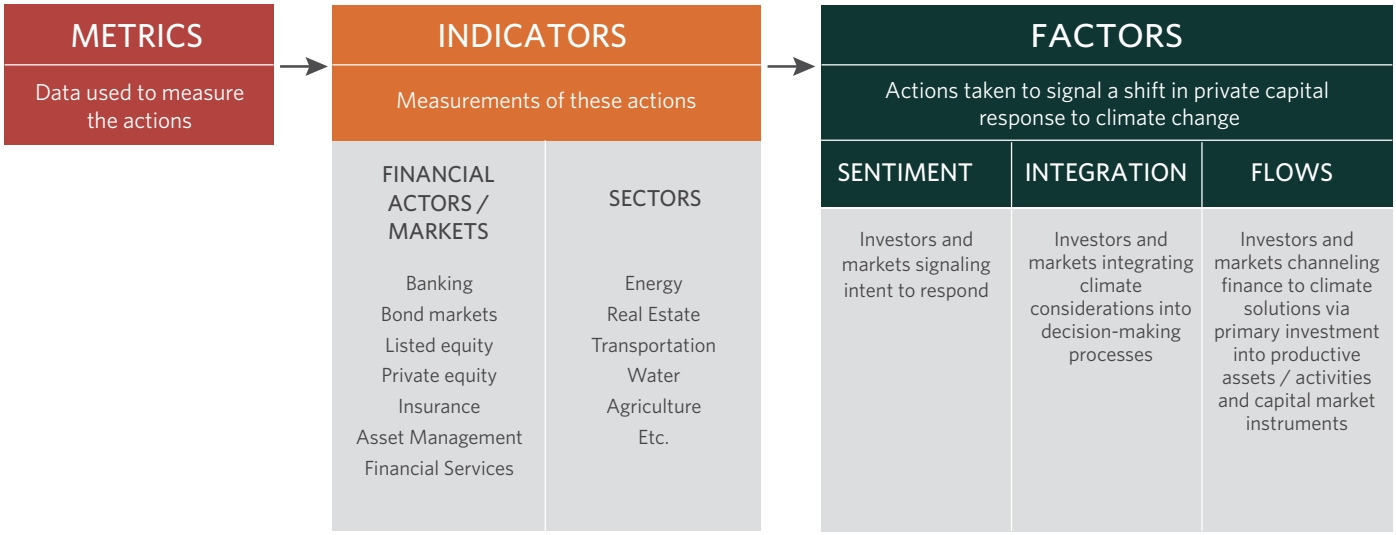
A comprehensive assessment of the private capital response to climate change would capture primary and secondary financial flows directed at climate action, as well as broader signals of investor intent and climate-proofed decision making.

2.2 Defining a logical framework: measuring shifts in and Sentiment, Integration and Flows

Since it would be useful to capture the adoption of a variety of initiatives in any assessment of shifts, the logical approach for a dashboard is based on identifying concrete actions made by private capital owners, decision-makers, enablers, and influencers that together can result in a shift in private capital.

Three factors – **sentiment, integration** and **flows** – have been defined here to describe the suite of possible actions taken by private capital actors in response to climate change. These broad factors are used to identify and cluster individual indicators (both financial and sectoral) to form aggregate system-level indicators. Indicators are, in turn, informed by individual metrics based on publicly available data points. This structure is illustrated in **Figure 1**.

Figure 1: Logical framework to the dashboard indicators.



1. SENTIMENT: captures how actors signal their intent, needs, and targets to partners in government and their beneficiaries on how they will respond to the climate challenge.

NATURE OF SHIFT: SIGNALLING INTENT TO RESPOND

Investor coalitions, public letters and statements, investment principles and pledges, and commitments by financial actors signal the seriousness with which they are treating climate risk and provide a leading indicator for the nature and speed of their responses to the climate challenge in the future. Actions that demonstrate sentiment from private capital owners and decision makers may ultimately lead to integration and flows in the system. Tracking sentiment alone is not sufficient to measure the speed of actual change, but does provide insight into the nature of financial actors' positioning in response to climate change, prior to integrating this sentiment into their decision-making processes.

2. INTEGRATION: captures how private capital actors and markets integrate climate considerations into decision-making processes.

NATURE OF SHIFT: CLIMATE PROOFED DECISION-MAKING

Risk management policies, lending approval procedures, asset management mandates, stock listing and issuance requirements, and regulatory reporting and disclosure requirements all include relevant processes where climate considerations may be integrated and may influence the resulting flows of private capital when implementation is successful.

The end goal is full integration of climate considerations into these processes, measured either by the numeric proportion of actors/exchanges fully integrating climate change in decision-making, or the proportion of market value represented by them.

3. FLOWS: captures the allocation, transaction, and investment of financial flows on two levels:

NATURE OF SHIFT: FINANCING CLIMATE SOLUTIONS

(a) primary investment/"new real investment" into new productive assets and activities that directly mitigate climate change and adapt to its impacts. This measures whether the low-carbon, climate-resilient real economy is being realized, and identifies the sectors and asset classes in which flows are most concentrated. Approaches to date (see CPI's Global Landscape of Climate Finance series) have used these flows to represent shifts in the real economy (e.g. renewable energy deployment, sustainable transport infrastructure, energy efficiency in buildings and industry). They typically involve project finance actors like corporations, developers, and banks. In the private

sector, primary investment in climate-related projects totaled an average of USD 249 billion over 2015-2016, the majority coming from corporations and banks.[2]

(b) portfolio or systemic flows that represent shifts of private capital in financial markets over time. This would measure how the nature of the financial system is shifting to low-carbon and climate resilient actions.

For both primary and portfolio flows, measuring the equivalent flows, and any reduction in such flows, on fossil fuel-related or other carbon-intensive investment is useful for comparing how the overall shift in flows performs relative to the urgency of the climate change challenge.

This logical framework casts as wide a net as possible in both defining and measuring 'actions' by private capital in response to climate change in order to get the most accurate possible sense of shifts in private capital, both in terms of actual flows and expected future flows based on integration and sentiment actions.

But shifts in private capital do not occur in a vacuum. Investors and markets respond to effective enabling environments brought about by policy and regulatory frameworks. They also respond to the lack of such frameworks or their inability to manage real or perceived risks. These risks may be realized through future policy changes; technological innovation; or physical risks from climate-related weather events. While these areas are **underlying drivers** for shifts in private capital, they do not lend themselves to an understanding of whether private capital is responding and currently shifting at the speed and scale necessary to respond to climate change.

2 Climate Policy Initiative. 2018. "Global Climate Finance: An Updated View 2018". Climate Policy Initiative.

3. The dashboard

This section of the brief presents proposed aggregate indicators, detailed indicators and data sources.

3.1 Five aggregate indicators

The proposed dashboard would consist of five aggregate level indicators across the three factors, as seen in Table 1. Both the Sentiment and Integration factors are based on data from a variety of sources, compiled in an index for overall progress measurement, while the Flows factor records new finance into real economy productive assets such as infrastructure and new flows within the financial system, such as green bond issuances, relative market capitalization of 'green' listed equities, assets under management against low-carbon indices, and others. Flows are compared to the existing total stock of those asset classes represented by low-carbon or consistent assets over time.

Table 1: Five aggregate level indicators to measure the shift in private capital

<table>
<tr><th></th><th>SEGMENTS\ FACTORS</th><th>SENTIMENT</th><th>INTEGRATION</th><th>FLOWS</th></tr>
<tr><td rowspan="7">FINANCIAL ACTORS/ MARKETS INDICATORS</td><td>Banking</td><td rowspan="7">Indicator 1:
Climate Sentiment Index
Sentiment is an assessment of engagement publicly and privately with financial actors in the system to kickstart action that results in flows and integration:
• Targets
• Commitments
• Principles
• Calls to action/letters
• Coalitions</td><td rowspan="7">Indicator 2:
Climate Integration Index
Integration is an assessment of how actors and markets are integrating climate into their decision making - in relation to:
• Loan approvals
• Listing rules
• Asset allocation
• General climate risk management</td><td rowspan="7">Indicator 3:
New Flows quarterly and annually

Indicator 4:
Total Stock annually only</td></tr>
<tr><td>Bond markets</td></tr>
<tr><td>Listed equity</td></tr>
<tr><td>Private equity</td></tr>
<tr><td>Insurance</td></tr>
<tr><td>Asset Management</td></tr>
<tr><td>Financial Services</td></tr>
<tr><td rowspan="6">SECTORAL INDICATORS</td><td>Energy</td><td rowspan="6"></td><td rowspan="6"></td><td rowspan="6">Indicator 5: New Real Investment quarterly and annually</td></tr>
<tr><td>Real Estate</td></tr>
<tr><td>Transportation</td></tr>
<tr><td>Water</td></tr>
<tr><td>Agriculture</td></tr>
<tr><td>Etc</td></tr>
</table>

Figure 2: Dashboard aggregate indicators on quarterly and annual updates.

QUARTERLY

SENTIMENT	INTEGRATION	FLOWS
MARKET SENTIMENT Actions that signal the intent of private capital actors to respond to climate change have increased by 5% compared to last quarter. +5% ^	**CLIMATE INTEGRATION** Integration of climate change considerations into market processes and decision making has increased in terms of number of institutions and market cap compared to last quarter +9% ^	**NEW SYSTEM FLOWS** Flows across the financial system decreased by $13.4bn in Q1 2018 compared to Q1 2017 This is a 20% decrease on the same quarter in 2017. -20% v
	But integration and sentiment indicators compare to the previous quarter to take account for momentum.	**NEW REAL INVESTMENT** Investment into new climate assets has increased by $7.5bn in Q1 2018. This is a 14% increase on the same quarter in 2017 +14% ^

Aggregate flows indicators compare to the same quarter in the previous year to take account of normal market fluctuations over a year.

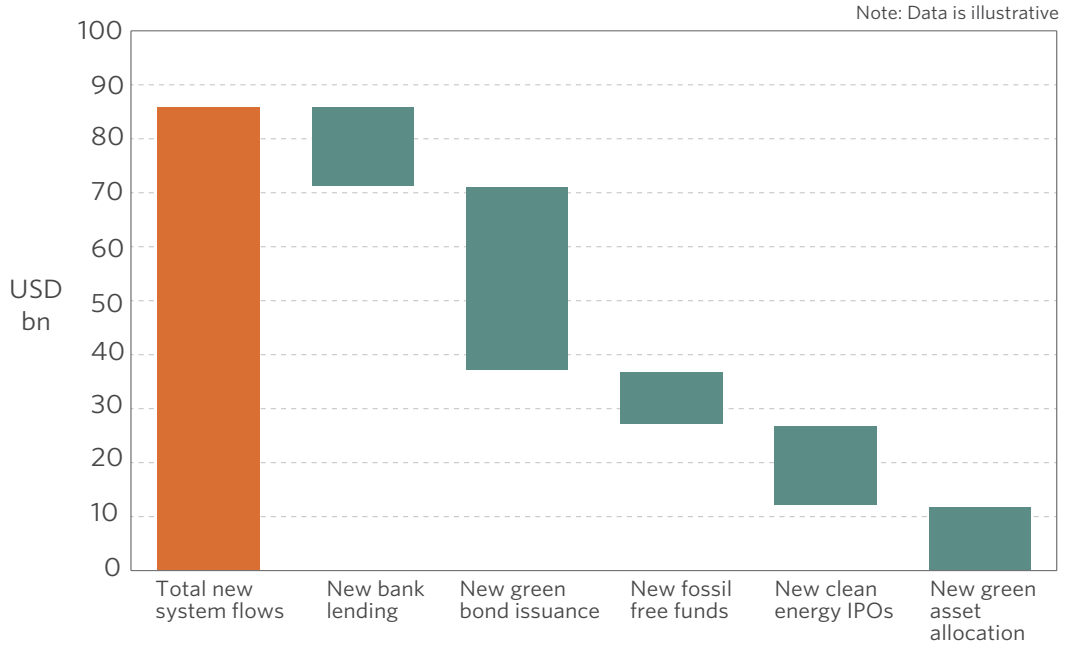
Note: Data is illustrative

ANNUAL

SENTIMENT	INTEGRATION	FLOWS
MARKET SENTIMENT Actions that signal the intent of private capital actors to respond to climate change have increased by 14% compared to last year. +14% ^	**CLIMATE INTEGRATION** Integration of climate change considerations into market processes and decision making has increased in terms of number of institutions and market cap compared to last year +18% ^	**NEW SYSTEM FLOWS** Flows across the financial system increased by $169bn in 2017. This is a 45% increase on 2016. This is 0.6% of total new flows in the same period. +45% ^
• New annual metrics in red based on data availability • Fossil fuel activity or divestment is included in the weighted metrics for system flows, integration, market sentiment, but not for new real investment i.e. no net calculation.		**NEW REAL INVESTMENT** Investment into new climate assets has decreased by $12.6bn in 2018. This is a 3% increase on 2017. +3% ^
		NEW REAL INVESTMENT The stock of climate finance is 2.8% of all assets in the system at end-2017. This is a 4% decrease on 2016. -3% v

Note: Data is illustrative

Figure 3: Waterfall chart demonstrating breakdown of new system flows.



For the dashboard to provide an indication of the shift in capital occurring, it is important to have indicators to provide a sense of whether the shift is occurring or not in the present moment based on flows, as well as show the overall progress of the shift in aggregate based on the overall stocks.

The aggregate indicators are designed to represent current actions as a proportion of total overall potential action. The end-goal is absolute:100% of total stock of financial assets in the system or any new flows should be climate-aligned, all actors should have integrated

Table 2 - Financial actor/market categories used for the dashboard

Market	Asset Class(es)	Actors	Example Datapoints
Bank lending	n/a	Banks	Climate-related bank loans
Bond markets	Bonds	Investors, Banks, Exchanges	Green bond issuance, listing processes and requirements
Listed equity	Equity	Investors, Banks, Exchanges, Service Providers	Climate-related Initial Public Offerings (IPOs), Green economy indices, corporate commitments
Private equity	Equity	Funds	Private equity funds and investment
Insurance and reinsurance	n/a	Insurance providers	Insurance portfolios addressing climate risk, (re)insurance products and policies
Assets under management	All (esp. Equity, Infrastructure, Real estate)	Investors, Service Providers	Allocations to climate-related assets/away from carbon-intensive activities
Financial services	All	Service Providers	Credit rating decisions and processes

Table 3 - Sector categories used for the dashboard

Sector	Example sub-sectors
Energy	Renewable energy, energy productivity, fossil fuel investments
Real estate	Zero energy or carbon buildings, sustainable building standards
Industry	Green production in cement, steel and other manufacturing sectors
Transportation	Electric vehicles, urban transit, biofuels
Water	Low-carbon, resilient water infrastructure
Agriculture	Low-carbon, climate-resilient agriculture
Forestry	Forest protection, afforestation, commodity-driven deforestation
Waste	Low-carbon waste management

climate change considerations, and all actors should have signaled their intent to respond to the climate challenge.

A sense of momentum in the shift may be derived from the quarterly and/or annual increase or decrease in these indicators. **Figure 2** provides an illustrative snapshot of what quarterly and annual aggregate indicators could look like in the dashboard with green/red arrows indicating the momentum of the shift. The constituent elements of each aggregate level indicator could also be viewed through a waterfall chart **(Figure 3)** so that viewers may assess which element has been the major driver of performance.

3.2 Detailed indicators for financial actors and sectors

The composition of indicators for each of the three factors would be based on a set of financial actors/markets and sectors relevant to shifts in private capital towards climate-relevant investment. The categories of financial actors and markets are detailed in Table 1, and sectors in Table 2.

Please see **Annex A** for a detailed matrix listing possible indicators by financial actor and sector, respectively – for Sentiment, Integration and Flow factors.

3.3 Data metrics

3.3.1 IDENTIFYING AND EVALUATING DATA SOURCES

Each indicator would be built from one or more underlying data point. During the data scoping process for this dashboard proposal, a premium was placed on data which was publicly available and published on at least an annual frequency, in the most transparent way possible. Each data point was scored according to three criteria from 0 to 3, combining to a total score out of 9, as a qualitative guide to whether it should be included in the dashboard itself:

- First is **frequency**, referring to frequency of publication.
- Second is **quality**, referring to whether the data source enhances understanding of the speed of the shift in private capital, the nature of the shift, or both.
- Finally, **availability** reflects how accessible the data is. Data sources that are publicly available in raw form score the highest.

Table 4 describes how scoring functions in the proposed dashboard. Note that the relative importance of the criteria, the guidelines for scoring and whether to include all criteria may be subject to adjustment as the

Table 4 - Scoring system for dashboard data points

	Score	High	Medium	Low	None
Criterion	**Points**	3	2	1	0
Frequency	Consistency of publication	Annual or less regular	More than annual, regularly published	More than annual, irregularly published	Unknown
Quality	Provides an understanding of the speed or nature of the shift in investment	Fully	Either speed or nature	Partially	Not at all
Availability [3]	Public availability of metrics and associated data	Publicly available in granular detail (raw data)	Publicly available in limited detail (report)	Publicly available as press release or similar	Not publicly available

3 Note that any data point that is published on a **less-than-annual basis** automatically scores zero across all criteria.

dashboard evolves. Similarly, as new data sources come online or disclosure/publication frequency improves, the composition of the dashboard may change in response to higher scores.

Importantly, data are not available for all indicators, particularly at the sectoral level.

For reliable quarterly or semi-annual measurements of progress, the availability of public data or proxy studies is significantly worse for flows and integration indicators, but feasible for sentiment indicators:

- For **sentiment**, quarterly measurements are possible on many data sources but may not change significantly from one reporting period to the next.
- For **integration**, proxy studies on integration are available on an annual basis at most.
- For **flows**, to regularly assess quarterly data and verify the quality of annual data, it would be necessary in most cases to make use of commercial and proprietary data sources across several market segments and sectors.

Annex B provides an overview of the level of data availability across the main factors and aggregate indicators.

3.3.2 SENTIMENT INDICATORS: AVAILABLE DATA METRICS

Actors signal their intentions, needs, and targets to partners in government and their beneficiaries, which can kickstart action that results in integration and flows. While more removed from the ultimate realization of emission reduction and climate resilience investment, sentiment is one potential proxy for mapping the forward-looking intentions of private capital in responding to the climate challenge.

In recent years, many private capital finance actors have become engaged in climate action from several distinct sources - including coordination among investor groups around key political events (including the annual international climate conferences (COP) and G7/G20 Summits) to call for strong policy decisions to support climate investment, and more recently, action-based pledges, quantitative and qualitative investment commitments, and emission reduction targets adopted by private finance actors. The We Mean Business Coalition (WMB) is now a primary coordinating body for the active pledges across various sectors.

Simply committing to these initiatives does not imply that specific financial flows will necessarily follow. Nor does it demonstrate that climate considerations are fully integrated into business models. Market

signaling through investor sentiment can, however, be a key leading indicator for integration, and eventually, financial flows.

Key to estimating the potential leading effect of actions on market sentiment is separating actions that represent clear steps towards financial flows occurring or business models changing, from those that represent less stringent or ambitious actions. The current version of the dashboard proposes allocation of weights to each type of action, according to its proximity to capital shifts:

- **Direct actions (DA)** taken by the actor that will have impact on emissions/resilience. For example, internal targets and investment commitments.
- **Indirect actions (IA)** where the actor lends its weight to influence others in the system. For example, signatory to industry-wide principles or qualitative goals.
- **Awareness raising (AR)** actions where the actor is part of a coalition highlighting climate issues. For example, calls for action.

As with Integration data points, the trend in the number of actors participating in initiatives is identified and then weighted 60:30:10 for DA:IA:AR, to arrive at the index indicator. An appropriate baseline year is indexed at 100, and momentum in sentiment growth is measured from that baseline. Currently available data sources are featured in **Table 5**.

As with integration, volumetric measures, such as the relative market capitalization or assets under management of actors participating in each initiative, may be used instead of numbers of participants where appropriate data is available.

3.3.3 INTEGRATION INDICATORS: AVAILABLE DATA METRICS

Understanding how actors in the financial system integrate climate considerations into their decision-making processes relies on them disclosing such information either through qualitative surveys, regulatory disclosures, or independent reviews. For each market segment, data sources need to have enough breadth of coverage to be able to claim to represent a significant amount of overall activity in the market segment so that full integration may be appraised.

In addition, the survey data must also provide enough granularity to identify actors which are 'fully' integrating or performing at a high quality, and those who may be simply meeting minimum requirements or a broader scope. This is particularly relevant when considering data on ESG data integration, which may or may not act as a proxy for green or climate-aligned decision-making. Both the Asset Owner Disclosure Project and Ceres Insurer Climate Risk Disclosure Survey (CRDS) offer important categorizations to identify 'high quality' processes or 'Leaders' among their survey respondents that ensures that full integration in decision-making is prevalent.

Other relevant data points include bank surveys (Boston Asset Management); sustainable stock exchange listing rules (We Mean Business); internal carbon pricing by listed corporations (CDP); and qualitative reviews on how ESG is integrated into credit rating analysis (Principles for Responsible Investment).

An additional data point to capture progress in realizing risks to fossil fuel investment is in projected fossil fuel capital expenditure by listed corporations (Wood Mackenzie/Coal Plant Tracker). As this data is projected expenditure it is not a financial flow, but it does provide an indicator for climate-risk integration within strategies and investment decisions by the corporation.

The trend in the increase/decrease of actors meeting the criteria in **Table 6**, as well as the proportion of the number of actors against the total survey respondents, is equally weighted across seven different actor categories to provide the aggregate index indicator. With further data on the exact constituents of each survey, the relative market size of the actors in terms of assets or market capitalization may also be used to derive the aggregate indicator. This would result in greater emphasis placed on the largest actors representing a shift in the private capital response.

3.3.4 FLOWS INDICATORS: AVAILABLE DATA METRICS

Flows should follow any financial transactions that may support the transition to a zero-carbon, climate-resilient economy or support the greening of the financial system.

Available data on flow indicators is listed in **Table 7**. They include: clean energy asset finance, IPOs, and private equity investment; electric vehicle investment (Bloomberg New Energy Finance/Frankfurt School, BNEF/FS); green bond and climate-aligned bond issuance (Climate Bonds Initiative, CBI); growth in the

Table 5: Sentiment indicators: available data metrics. Note: blue font indicates quarterly data availability

	Sentiment (%)		
Financial Actors/ Markets Indicators	Banking	• UNEP FI Banking Principles / SBN • Banking and Environment Initiative	IA AR
	Bond markets	• Green bond pledge • ICMA Green/Sustainable Bond Principles	DA IA
	Listed equity	• Science-based Targets • TCFD disclosure/ commitment to report • CDP disclosure	DA IA/AR IA
	Private equity	• EMPEA survey data on cleantech	AR
	Insurance	• UNEP PSI members • Unfriend coal supporters	IA DA
	Asset Mgmt	• Climate Action100/ PDC /Investor agenda • PRI disclosure • TCFD support • G20/ UNFCCC letters	DA IA IA AR
	Fin. Services	• Credit rating changes due to climate/env	IA
Sectoral Indicators	Energy	• RE100 and EP100	DA
	Real Estate	• GRESB members	DA
	Transportation	• EV100	DA
	Other	• Reduce deforestation pledge	AR

Table 6: Integration indicators: available data metrics. Note: blue font indicates quarterly data availability; blank cell denotes current absence of data

	Integration	
Financial Actors/ Markets Indicators	Banking	• Applying climate strategy, risk management in report survey (Boston AM)
	Bond markets	• SSEs with green bond listing processes (WMB)
	Listed equity	• Corporate internal carbon price integration >$40 (CDP) • SSEs with green listing segments, ESG rules (WMB) • Decrease projected fossil fuel capex (Wood Mackenzie/Coal plant tracker)
	Private equity	
	Insurance	• High quality rating from CRDS survey
	Asset Mgmt	• AODP leaders category
	Fin. Services	• ESG integration in credit ratings PRI update

Table 7: Flows indicators: available data metrics. Note: blue font indicates quarterly data availability; blank cell denotes lack of data

		New System flows ($)	Total stock (%)	New real investment ($)
Financial Actors/ Markets Indicators	Banking	• D/E ratio on RE asset finance (BNEF/FS)		N/A
	Bond markets	• New green bond issuance (CBI) • New climate-aligned issuance (CBI)	• % total market capitalization (World Federation of Stock Exchanges)	
	Listed equity	• Clean energy IPOs (BNEF/FS) • Green economy market size (FTSE) • Decline in FF market size (FTSE)	• % total market capitalization (World Federation of Stock Exchanges)	
	Private equity			
	Insurance		• % direct premiums written (SwissRE)	
	Asset Mgmt	• Climate-related asset allocation (AODP) • Change in value at risk (EIU)	• % of global AuM (PwC)	
	Fin. Services	N/A	N/A	
Sectoral Indicators	Energy	N/A		• Clean energy asset finance (BNEF/FS)
	Transport			• Electric vehicle sales (International Energy Agency)

market size of the listed equities with green revenues and fossil fuels (FTSE); climate-related asset allocation (Asset Owner Disclosure Project, AODP); and value at risk from climate change (Economist Intelligence Unit, EIU). Only green bonds and clean energy asset finance data are available on a quarterly basis. To measure the cumulative flows against total stock, only bonds, market capitalization and assets under management values are available on an annual basis.

Other data points important for future consideration include funds committed to fossil fuel divestment, such as fossil free funds; fossil fuel bank lending derived from the Banking on Climate Change report; IEA energy efficiency investment estimates; and estimating brown finance flows into new productive assets such as coal plants.

A specific lack of data points are in the area of the value of new climate-aligned insurance policies written compared to direct premiums written (Swiss RE); assets managed and benchmarked against low-carbon indices; investment in new productive climate-aligned or brown assets in industry, real estate, and other sectoral data points. These data points may be available through commercial or proprietary datasets.

4. Implementation challenges

Here, we discuss three main limitations in fully realizing the dashboard indicators and potential strategies to mitigate these, where they exist.

4.1 Data gaps

The three factors that make up the dashboard approach – sentiment, integration and flows, and– conceptually capture much of what could be considered the active response by private capital to the climate challenge.

However, initial data scoping has shown that the information required to accurately measure financial flows and integration of climate change in decision making across the financial system and in real investment is not yet available. In particular, data points with broad coverage of financial flows through the banking sector, insurance premiums, listed equity, and asset allocation are lacking. This also pertains to flows that support real productive investments on an annual basis in the construction of zero carbon or zero energy buildings, climate-compatible industrial production, mass transit infrastructure, sustainable agriculture and forestry and climate-resilient water infrastructure, as well as climate-resilient infrastructure more generally.

Broad coverage in the banking sector is also lacking for integration data points and any meaningful benchmarks in the listed equity segment. Both the science-based targets initiative as well as future disclosures under the TCFD recommendations hope that such data points may be forthcoming in the future. The dashboard would highlight data gaps requiring focus by different data providers and collaborations.

4.2 Defining alignment and measuring the speed of the shift

Using the dashboard indicators to effectively measure the speed of the shift in private capital requires both (a) measuring rates of growth or decline over a period, and (b) identifying an end-point as a means of reference as to whether such growth or decline is 'on track.' For sentiment and integration, this end-point represents full integration of climate considerations or initiation of pledges and commitments to action across all markets/sectors, respectively. Degree of integration is measured as an index out of 100 (which represents 'full' integration), while sentiment is measured as an index with a baseline of 100.

For flows, identifying a reference point will require taking a position on what a complete shift in private capital flows looks like. Current data points highlight where climate-aligned flows are occurring in different asset classes and market segments. However, a full transition would not expect total flows to reflect these climate-aligned data points but also take into account flows which 'do no harm' but would not be classified as actively contributing to emissions reductions or resilience to climate change.

One strategy is to assess the degree to which private capital flows are in alignment with, or consistent with, an effective private sector response to climate change. In addition to defining 'green' flows, this requires the development of a definition of flows that are not climate-related but do no harm (e.g. in IT infrastructure, health, and education), as well as the requisite data coverage to assess the proportion of total capital that is 'aligned' or 'consistent' with climate targets. [4]

Approaching this question from the opposite angle, measuring the proportion of flows that 'do harm' or are 'inconsistent' such as fossil fuel-related investments, would still require definitions for all such harmful activities across the economy as well as data coverage for areas such as deforestation. Definitions and targets would ideally reflect net zero ambitions since even some of the most stringent low-carbon and climate-resilient pathways include some carbon-intensive investments to a limited degree (e.g. gas and nuclear power, aviation and road infrastructure) (IPCC 2018) that can be matched by sequestration potential.

These definitional issues remain under discussion in the research and political communities, in the context of interpreting Article 2.1(c) of the Paris Agreement, which outlines a long-term goal of making financial flows consistent with low GHG emissions and climate-resilient pathways. The concept of 'alignment' with Paris is emerging as the new paradigm for increasing climate action ambition within the financial community. Importantly, it recognizes that entire investment portfolios, not just the portfolio shares comprising projects that are directly related to climate goals (traditional 'climate finance'), need to be made consistent with the Paris Agreement objectives, including its long-term goals, for a successful capital transition to be possible.

4 For a detailed discussion on definitions of Paris-aligned investment, see Cochran, I. and A. Pauthier (2019) and Clark, A. et al. 2019. "Implementing Alignment with the Paris Agreement"

An extension of this approach would set targets for the relative or absolute amount of total flows that should be climate-aligned (and by implication, those that are non-aligned). This end-point requires accurate readings of the level of climate-related investment required by modelled scenarios (typically integrated assessment models, IAMs), within certain time periods and in what sectors and regions. The weaknesses in basing an approach on such models is that the models often:

(a) have wide ranges of investment estimates due to the multiplicity of pathways possible to achieve mitigation goals and uncertainties inherent in climate system modelling

(b) are cost-optimized based on outdated technology mixes or learning curve cost assumptions and macroeconomic conditions

(c) rely on sectoral and regional interlinkages and assumptions on burden sharing to achieve global mitigation goals

All of these limitations make translating scenarios into a global measurement framework against actual flows difficult.

An option that avoids the need to develop and reconcile detailed definitions of 'aligned' finance is to **develop short-term goals for absolute investment amounts by different private capital providers** that provide the opportunity to raise ambition over time, similar to the 'ratcheting mechanism' for country-level ambition enshrined in the Paris Agreement. The difficulty in this approach, in addition to the short-term goals being set in an arbitrary fashion, is in communicating that the shift to achieving these arbitrary short-term goals is one step of many, rather than a fully sufficient response, and indeed is at a threshold high enough to be consistent with the transition.

4.3 Identifying recommendations for public actors

The dashboard's methodological focus is on private capital, which without additional context may be seen as a hindrance to its comprehensiveness, and to the construction of an overall narrative around what the metrics represent, given that there is no corresponding measurement of public sector sentiment, integration, and flows. This is particularly important if the dashboard is to be used for promoting the use of public policy or finance levers to mobilize private sector action.

For some sentiment metrics, it would be possible to disaggregate public and private supporters/signatories of various initiatives for which there are individual signatory lists. Given most of these are private sector-driven initiatives, a full assessment of public sector sentiment would require more in-depth work on assessing long-term budgetary goals or emission reduction goals of public institutions, work already under way in projects including the Climate Actor Tracker and IGES' Nationally Determined Contributions (NDC) database, that may ultimately feed into an expanded version of the dashboard.

Similarly, for integration metrics, expanding the scope to the public sector would require a systematic approach to aggregating existing policy actions related to mandatory financial disclosures, and assessing the strength of such policy actions in terms of integrating climate considerations. Such an exercise may already be under way by other projects that may feed into the framework, for example the UNEP Inquiry into the Design of a Sustainable Financial System.

Data on most flows – including new clean energy projects, climate-aligned bonds, market capitalization of the green economy, assets under management, and insurance provision, does not differentiate public finance actors from private finance actors. The data sources are most appropriate for measuring shifts in private capital, since they represent change in commercial markets overall, where bonds or share capital are raised, or where loans and equity are provided.

Even if sufficient granular data were available, differentiating between public and private actors across the various flows indicators would not be straightforward, since it would require developing a standard taxonomy of actors spanning the public-private spectrum, including pseudo-public actors such as state-owned enterprises/banks (SOEs), public sector pension funds, sovereign wealth funds and public-private partnerships (PPPs).

In summary, for integration and sentiment, further exploration would be necessary on other available data sources to add a public finance dimension to the dashboard. For flows, existing data sources used in the methodology would allow for disaggregation of public and private finance actions. Poor-to-moderate data quality and availability across many flows metrics would remain an issue, however.

5. Conclusions and next steps

This brief outlines a first attempt to design a dashboard to measure the private capital response to climate change – to reflect on the sufficiency and speed of the shift in private capital to help drive the transition to a zero carbon, climate-resilient economy.

The dashboard would ideally provide market participants, including both private capital investors and intermediaries, with:

- An accessible, at-a-glance overview of systemic progress.
- Insight into how their own market segment is performing (e.g. banking, insurance, listed equities, bonds).
- The ability to gauge whether their actions are sufficient to meet performance thresholds.

The dashboard framework includes three factors: sentiment and integration, capturing signals of investor intent and climate-proofed decision making, and flows, capturing primary financial flows in the real economy and secondary financial flows in the financial system. The brief identifies groups of indicators that could be used to assess each factor, covering each of the main financial system actors/markets and sectors. The brief then identifies potential data sources/metrics currently available that can help compile information for each indicator.

Two key limitations of the proposed dashboard are highlighted as areas for further work:

1. Current data gaps hinder the full realization of the proposed aggregate indicators. Further refinement of the framework and indicators, as well as collaborative data collection efforts, are needed to ensure the dashboard is as effective as possible in measuring and driving the shift in private capital.
2. Targets and benchmarks need to be further defined to enable an assessment of progress of different financial actors and markets, reflecting on both the scale and speed of progress.

As part of our continued work program aimed at comprehensively tracking the scale, nature, and sufficiency of global climate finance flows, CPI now looks to partners, old and new, to work jointly to consider ways to collectively implement and improve the dashboard proposed in this brief.

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7. Annex A – Summary of dashboard Indicators

		Sentiment	Integration	Flows
Financial Actors/ Markets Indicators	Banking	• Targets and pledges for use of low-carbon products and services and fossil fuel exclusion • # of major banks supporting industry associations adopting climate-related policies	• Qualitative assessments of the level of integration of climate change considerations into loan approvals across banking sector(s) including through regulatory or voluntary practices. • Policies demonstrating climate integration on governance, risk management, disclosure and/or stress testing • Fossil fuel-related exclusion policies	• Annual bank lending to climate-related projects or corporations against total annual lending • Total stock of climate-related loans outstanding and matured.
	Bond markets	• Market capitalization of private sector signatories on investor action for green bond markets	• Qualitative assessments of the level of integration of climate change considerations into bond issuance processes, listings and documentation, including through regulatory or voluntary practices.	• Annual climate-related bond issuance against total annual bond issuance (in % or US$ amounts) • Total stock of outstanding and matured climate-related bond issuances
	Listed equity	• Market cap/number of Corporate action on science-based targets • Market cap/number of corporations reporting to CDP • Market cap/number of corporations support for the recommendations of the Task-Force on Climate-Related Financial Disclosures • Targets and pledges for use of low-carbon products and services and fossil fuel exclusions • Market cap/number of membership of industry associations adopting climate-related policies • Market cap of signatories of UN Global Compact Business Leadership Criteria on Carbon Pricing • Market cap of signatories of World Bank Statement on Putting a Price on Carbon	• Qualitative assessment of level of integration of climate change considerations into stock exchange processes, listings, disclosure and documentations, including through regulatory or voluntary practices. • Qualitative assessment of level of integration of climate change considerations in stock market indices, including through regulatory or voluntary practices. • Policies demonstrating climate integration on governance, risk management, disclosure and/or stress testing	• Annual climate-related initial public offerings (IPOs) or common stock offerings against total stock offerings • Total market capitalization of climate-related stocks against total market capitalization • Climate-related indices market capitalization, performance or other indicators against recognized benchmark indices

		Sentiment	Integration	Flows
Financial Actors/ Markets Indicators	Private Equity	• Number of funds with climate sectors as investment priority by fund managers survey (EMPEA)		• Annual private equity investment into climate-related funds, projects or corporations against total annual private equity investments.
	Insurance and Reinsurance [5]	• Targets and pledges for climate risk coverage and/or fossil fuel exclusion	• Qualitative assessment of level of integration of climate change considerations into insurance provision processes, including through regulation or voluntary practices • Trend in Insurer Climate Risk Disclosure Survey (CRDS) ratings • Number of insurance firms with policies not to insure in fossil fuel projects	• Value of annual new insurance written addressing climate-related risks against total value of new insurance written. • Total value of insurance portfolios addressing climate-related risks • Annual levels of climate-related risk exposure in insurance portfolios
	Assets under Management	• AuM of investor action platforms e.g. Climate Action 100; Portfolio Decarbonisation Coalition; Investor Agenda • AuM of signatories of letters/ calls for action e.g. G20 on Paris Agreement implementation; TCFD recommendations • Asset Owner Disclosure Project rankings from Global Climate Index • Targets and pledges for investment in low-carbon products and services and fossil fuel exclusion	• Qualitative assessment of level of integration of climate change considerations into asset allocation or investment decision-making processes and disclosure including through regulation or voluntary practices e.g. Asset Owners Disclosure Project (AODP)	• Asset allocation to climate-related assets in new annual commitments and/or total announced allocations • Fossil fuel divestment by volume and assets under management represented
	Financial Services	• Number of credit rating decisions based on climate change considerations	• Qualitative assessment of level of integration of climate change considerations into investment consultant services • Qualitative assessment of level of integration of climate change consideration into credit rating decision-making processes	• Performance of climate-related indices against standard industry benchmarks

5 Note that the asset management function of insurance companies is captured in Assets under Management

		Sentiment	Integration	Flows
Sectoral Indicators	Energy	• Signatories of RE100 renewable energy procurement commitment (WMB) • Signatories of EP100 commitment to double energy productivity (WMB) • Insurance firms with policies not to insure or invest in fossil fuel projects	Not Applicable	• Primary investment in climate-related vs. fossil fuel energy projects
	Real Estate	• Signatory of industry efforts, e.g. GRESB		• Primary investment in zero energy buildings
	Industry			• Primary investment in green production
	Water	• Signatories of Improve Water Security Commitment (WMB)		• Primary investment in low-carbon and climate-resilient water infrastructure
	Agriculture			• Primary investment in low-carbon and climate-resilient agriculture
	Forestry	• Signatories of commitment to remove commodity-driven deforestation from all supply chains by 2020 (WMB)		• Primary investment in forestry protection
	Waste			• Primary investment in low-carbon waste management
	Transportation	• Signatory of EV100 electric vehicle commitment (WMB) • Signatories of below50 sustainable biofuels commitment (WMB)		• Primary investment in deployment of electric vehicles • Primary investment in mass urban transit

8. Annex B – Data Availability and Quality across Sentiment, Integration and Flows

Goal: Measure the nature and speed of shifts in private capital in response to climate change		
Indicators	Availability of public data to measure the Nature of the shift	Availability of public data to measure the Speed of the shift
Sentiment	**Good** Publication of data across market segments and actors is good although time-consuming to aggregate and collate.	**Good** The methodology measures annual rate of growth in actors signing up to actions demonstrating intent to act.
Integration	**Moderate** Studies relying on survey data in banking, insurance and assets under management are moderate to good quality with defined thresholds on the proportion of 'leaders' in market segments. Available information on listing rules for bond and equity market exchanges are also of good quality although a further examination of whether such rules are effective may be necessary.	**Moderate** Taking the end-point as full integration of climate considerations by market actors and exchanges, measuring the speed of the shift is possible in a meaningful way. However, the qualification that what is assessed as 'effective' integration applies.
Flows A. System flows (capital markets)	**A. Poor** Good data exists on climate-aligned bond flows but not on fossil-related bonds. Other segments such as listed equity and bank lending for fossil fuels rely on proxy studies. Reporting by institutional investors is very limited. No data exists for insurance underwriting and bank lending for climate projects.	Annual rates of growth and decline possible in market segments with good data. For real investment flows, this would need to be contextualized for changes in technology costs.
B. Real investment flows	**B. Poor-to-moderate** Good data on clean energy and fossil fuel investment (to assess declines), and electric vehicles. No or limited data on green buildings, clean industry, public transit systems, sustainable agriculture, forestry, and adaptation.	A view on whether the speed of the shift is 'enough', would require an assessment of the end-goal that a total shift would represent on either a total alignment or proportional/target basis.