DISCLAIMER

This draft working paper has been prepared by the authors for consideration by the G20 Green Finance Study Group (GFSG). The recommendations, numbers, positions and conclusions included in this document should not be considered binding nor official and are shared by the authors only to receive comments and inputs. This draft working paper has been authored by WBG staff but still needs to go through a review process for clearance and official publication by the World Bank Group (WBG). In the meantime, the authors welcome comments.

This working paper does not represent the official views or position of the G20, GFSG or any of its members or the World Bank Group.

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I. INTRODUCTION

The greening\(^1\) of the financial system will require going beyond current measures. A green transformation of the financial system will need to be supported by new and robust metrics that track green progress in a sophisticated and comprehensive manner.

Momentum around the role of the financial sector in supporting sustainable development and addressing climate change has been accelerated by the G20. This movement has been further strengthened by recent developments that may positively affect the growth of green finance such as the Financial Stability Board’s climate-related financial disclosures work and the Paris Agreement at COP21. As countries look to greening their growth paths, the estimated investment opportunity for resilient and sustainable infrastructure is expected to be $93tn by 2030, with the private sector expected to fund the majority of the investment needed.\(^2\) With the financial sector’s mandate to manage risk, allocate capital, mobilize savings and intermediate funds across the real economy, making headway with the green transformation will require mainstreaming sustainability in financing and investment decisions.\(^3\)

For policy makers and regulators it will be difficult to design effective incentives and guidelines to deliver on these long term economic transformation objectives without greater clarity over the existing universe of definitions, appropriate baselines, and robust measurement of finance flows and associated impacts to assess their performance on greening the financial sector.

However there is currently no systematic methodology for assessing progress on greening/transformational impacts within the financial system. For example, while there are estimates for some countries such as China on the proportion of banking assets that are ‘green’ (10 percent), there is no clear global approximation available of stocks or flows. This is made more difficult by inconsistent definitions of what constitutes green (please see the separate note on definitions prepared by UNEP Inquiry), the lack of data (availability and access), varying thresholds for labeling and reporting, and capacity and resource requirements (costs) associated with monitoring and measuring, allowing for investments to yield widely varying degrees of sustainability outcomes. In order to be able to address gaps and sequence appropriate interventions it is important to have a solid understanding and data set on practices, policies and monitoring approaches.

Advancing ways to measure progress in greening across the financial system and not just in specific silos will be critical for overall progress on this agenda. Ultimately it is relevant from both a policy and market based perspective in trying to understand how the green finance agenda is evolving.

This briefing note aims to outline a framework for taking stock of existing approaches to measuring green finance in a granular way, and to provide support to the other research subjects including banking, greening the bond markets, institutional investors and risk analysis.

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1. In the context of the G20 Green Finance Study Group (GFSG), the term “green” goes beyond the climate aspects.
II. CONTEXT

Greening the financial system goes beyond lending and investment standards by considering both the impact of environmental and social risk on the financial system, and the impact of the financial system on environmental and social risks. For example, climate change poses physical risks, transition risks and liability/reputational risks for the financial sector, but also presents opportunities in terms of new sectors and instruments for investments. Measuring progress on the greening of the financial system is useful, to both identify the degree to which financial institutions are adopting practices that impact sustainability and the extent to which sustainability is factored into risk assessments. It can also gauge the levels of finance being directed towards green sectors and growth objectives that have been prioritized by governments. While there are numerous lending or investment standards that have traditionally been proxies for this, there is no universal application or coordinated aggregated approach.

Moreover, these standards ensure compliance with passive principles and risk management; they do not capture transformation unless they include a thematic investment focus. In other cases, measurement is aligned with specific policies and guidelines introduced by the government for green banking.

In order to measure the performance of a financial system the current literature focuses mostly on depth, inclusiveness and stability of a financial sector. To measure sustainability within the financial system, additional criteria will be needed. Key criteria required include: resilience (degree to which sector is capable of bearing risks); efficiency (degree to which sector operates at cost at a societal level); efficacy (degree to which the sector serves the real economy from a societally appropriate perspective); and transparency which is essential to ensure effective decision making.

Information that gets measured most often gets managed. Hence, it will be important to consider the above criteria at different levels of granularity. This will include measuring progress from the global, national, financial institution, portfolio and instrument perspectives as the regulatory reach and measurement approaches associated and applied with each is different. (See table on page 10).

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4 For example: IFC performance standards, World Bank Investment Principles for Climate Change, Equator Principles, Global Compact, Environmental Social and Governance criteria, UN Principles for Responsible Investment etcetera.
5 For example, with the introduction of guidelines Bangladesh and Brazil have 5 and 10 percent of loans respectively that are green. The Green Bond Principles are now used by 95 percent of issuers, which allows for clear estimates on the flows (US$42bn in 2015) and stocks of green bonds.
7 i.e. external distortions to the capital allocation mechanism of the financial system.
III. EXISTING APPROACHES FOR MEASURING GREEN FINANCE

Further work is needed to identify relevant criteria and appropriate indicators to adequately measure and track progress on sustainability and greening within the financial system. This requires a better understanding of the risks and opportunities posed to the financial sector by climate change and other social and environmental challenges. As an initial step, this paper will seek to provide a stock-taking of the different approaches to measurement. The paper will look to varying levels of granularity, at initiatives for measuring and monitoring progress on greening finance including circular economy approaches and resource intensity accounting.

The mapping will align with other efforts to measure green progress in the financial space, including the FSB’s Task Force on Climate-Related Financial Disclosures that will also present its findings in 2016. This paper will identify current measuring approaches and what is currently being measured and reported. The paper will look to the underlying criteria/definitions being used to do this and see what lessons from these approaches can be capitalized by the G20 to improve the sustainability of the Global Financial System.

A quick review of existing green finance tracking initiatives and approaches reveals a range of practices being used. These practices respond to diverse motivations. For many green finance practitioners, the case for tracking green finance is rooted in the need for environmental and social due diligence as part of risk management measures. These environmental and social due diligence processes result in project level labels, types and indicators, for documenting compliance with safeguards and approval criteria at the project or portfolio level. Typically these due diligence indicators focus strongly on the assessment phase of transactions and do not cover the full project cycle or assess transformational impact. In the long term, and as evidence is gathered on the benefits of tracking green finance beyond the assessment phase, the due diligence approach may evolve into practices that demonstrate the advantages of tracking progress on managed green finance transformation processes. Should this materialize, the final metrics may also track projects’ and portfolios’ contributions to green growth targets and implementation of greening policies.

At the global level, the greening of the global financial system will rely strongly on indicators that track the connectivity and permeability of the whole financial system to the promoted green finance practices. As a goal, green finance indicators should enable the tracking of the transparency, efficacy, resilience and efficiency aspects of greening efforts:

- **Transparency**: Transparency indicators (e.g. passive vs active disclosure, CDP, etc.) are essential to build a growing ecosystem of green financiers and promises to unlock data sources needed to sustain the analytics and financing decision processes of investors and lenders with green targets.

- **Efficacy**: On the basis of transparency, indicators tracking material efficacy enable financiers to measure the impact of green finance and the delivery of concrete benefits, which if delivered in a context of a sound policy framework may represent in addition a new asset.

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8 As supported by the signatories of among others, Natural Capital Declaration, GHG Accounting and Climate Finance tracking within the financial industry.

9 Phase 1 report will be published 1 April and the phase 2 report will be published in December 2016. Both reports will be subject to consultation. More details here: http://www.fsb.org/what-we-do/policy-development/additional-policy-areas/developing-climate-related-financial-disclosures/

10 The global efforts for greening the financial system should be contextualized in the broader framework of green growth.
class for financiers (green finance dollars, monetized GHG reductions, ESG risk-hedged loans, etc.)

- **Resilience**: While transparency enables the birth of a green finance ecosystem and efficacy indicators support a business case for green financing, resilience indicators (e.g. Capital E&S risk, ESG) enable the distribution and matching of risk appetites with risk profiles of green finance opportunities.

- **Efficiency**: As green finance is at its infancy, efficiency indicators (e.g. level of subsidies, carbon prices, transaction costs, etc.) are essential to assure the competitiveness of its practices.

Based on the above, the following is a sample of current initiatives\(^\text{11}\) that include or promote tracking of green flows/finance/assets:

**a. Global**
- FTSE Russell’s Green Revenues (LCE) data model is designed to measure the revenue exposure of public companies engaged in the transition to the green economy and allows users to design, build and analyze your portfolios, baskets or indexes with this measure in mind. This model has a broad coverage of nearly 98.5% of the total global market capitalization capturing over 13,400 public companies across 48 developed and emerging markets.
- UN Principles for Responsible Investment – PRI.
- UNEP Inquiry/ UNEP FI.
- Carbon Price Leadership Coalition (CPLC).
- The Sustainability Accounting Standards Board (SASB), the only organization that creates industry-specific sustainability accounting standards for the capital markets.
- The International Integrated Reporting Council (IIRC), is a global coalition of regulators, investors, companies, standard setters, the accounting profession and NGOs. IIRC promotes communication and tools to integrate financial and extra financial (GHG emissions, ESG, etc.) into a about value creation as the next step in the evolution of corporate reporting.
- The Natural Capital Declaration\(^\text{12}\) (NCD).
- Joint Reporting Initiative on Multilateral Development Banks’ Climate Finance.
- Carbon Risk Assessment Framework.
- Climate Strategies and Metrics and Portfolio Carbon Initiative of the WRI, UNEP-FI and 2° investing initiative.
- Carbon Disclosure Project (CDP).
- The Equator Principles.

**b. National/subnational**
- 2012 Green Credit Guidelines from the China Banking Regulatory Commission (CBRC).
- 2010 Interpretive Guidance on disclosure related to climate change from the Securities and Exchange Commission (SEC).

\(^\text{11}\) Web links included in Annex VI.

\(^\text{12}\) NCD is a joint project of GCP and UNEP-FI, and has been signed by over 40 leading financial institutions. It is developing an accounting framework that includes natural capital within the wider definition of resources and relationships key to an organization’s success. Additionally, a disclosure and integrated reporting platform will enable financial institutions to understand their exposure to natural resource risks and opportunities.
Draft for Discussion

- France: Article 173 of the Energy Transition Law and associated reporting requirements.
- European Union’s amendment to general accounting directives to include ESG disclosure in a company’s annual financial filings.
- The UK Climate Change Act and associated adaptation reports.

c. Financial Institution

- Portfolio Decarbonization Coalition (PDC).
- Montreal Carbon Pledge.
- IFC Climate Definitions.

d. Project/financial instrument

- Green Bond Principles.
- People’s Bank of China Green Bond Guidelines.
- Climate Bonds Initiative.
- Impact Investing. This includes thematic financing specifically addressed for renewable energy, energy efficiency, forestry and sustainable transport.
IV. SAMPLE OF GREEN FINANCE PRACTICES

The following boxes provide a detailed look at two examples of approaches being pursued to mobilize green finance: through thematic investing and integration of ESG considerations (See Box 1), and through the introduction of regulatory guidelines (see Box 2). These examples do not aim to portray a complete representation of the diversity of green finance practices.

Box 1: Amundi Asset Management – Processes for Sustainability Themed Funds

Amundi allocates 10% of AUM to invest in green finance, mainly through listed equities, in areas such as: Clean technology, renewable energy, Green buildings, Sustainable Forestry, Sustainable Agriculture, Microfinance and Social enterprise / community investing.

In addition to listed equities, Amundi manages impact investing funds which help finance the real local economy through non-listed companies and associations: solidarity and profit-sharing funds, social business funds and development aid funds. Amundi’s impact investing focuses on five areas that promote social insertion through employment, education or training, housing, health, including dependency, the environment and international solidarity. A triple analysis is applied to select the social businesses to be invested:

- Credit analysis to ensure the financial soundness.
- ESG criteria to assess the Sustainability of the company.
- Solidarity analysis to measure social impact.

Amundi Asset Management

Processes for sustainability themed funds.

The extra-financial analysis team selects equities of European companies generating at least 20% of their sales from the development of green technology. These companies are active notably in the following sectors:

- Energy efficiency: electricity distribution, lighting, building materials
- Renewable energy: solar, wind, geothermal, hydro power
- Water management: distribution, treatment, equipment, desalination
- Waste management: treatment, equipment, recycling
- Biomass: biofuels, biochemicals, bioenergy
- Environmental services: engineering, CO2 capture, pollution control and tests

Companies that continuously produce fossil and nuclear energy are excluded from the universe.

At the end of this first step, the investment universe consists of 120-130 stocks.

An ESG (Environment, Social and Governance) filter is applied to this investment universe. It consists in taking into account companies with the best ESG practices in each business sector and in excluding those with the least good practices.

This selection is based on the ESG ratings of companies.

The fund manager also applies a liquidity filter, consisting in keeping the most liquid equities so as to be able to adjust the portfolio quickly (liquidity constraint: liquidation of the stock within 5 days at 25% of the average daily trading volume).

Once these two filters have been applied, the eligible universe is reduced to around one hundred stocks.

In this last phase, the fund manager reduces the portfolio’s risk by minimizing its volatility. At this juncture, the portfolio is controlled to check that its composition daily complies with the SRI (Socially Responsible Investment) rules of Amundi Group. The resulting portfolio complies with Amundi’s SRI rules and is comprised of 70 to 80 European stocks active in developing green technologies.

As an initial attempt to gather data, this paper seeks to review and compare the national and international schemes for defining and measuring as many countries as available, for banking, institutional investors, bonds and equities, respectively. The review considers the following elements:

- Examining how each approach uses similar or different thematic investment indicators to define green finance at a granular level. These indicators reflect the intention of the schemes to mobilize finance towards (1) general or specific green technologies or activities in priority sectors or (2) achieving certain environmental impacts.
- Investigating how each scheme uses broad principles or detailed process requirements for investment decision making and stakeholder relationship management, to mainstream ESG risk management in the policies, mechanisms and instruments of financial institutions.
Draft for Discussion

- Aligning the definitions with future work to develop indicators to measure green finance relative to conventional finance measurement, both by looking at the assets/flows covered by ESG risk management processes (mainstreaming) and the finance directed towards specific green activities/sectors (mobilizing). The indicators can potentially be developed to provide a green comparison relative to total assets/loans/issuance etc. in each category (banking, institutional investors, bonds, equities).

Box 2: The China Green Bond Catalogue

THE CHINA GREEN BOND CATALOGUE

The People’s Bank of China (PBoC) and the Green Finance Committee of China issued the Green Bond Guidelines and the Green Bond Endorsed Project Catalogue in December 2015.

The Green Credit Guidelines were taken by PBoC as a key input to develop a project catalogue that can be officially endorsed by the People’s Republic of China, thereafter referred as China GB catalogue.

Beyond the country’s endorsement for specific project types, the nature of this catalogue is critical, considering that PBoC regulates market entry, issuance, clearing and settlement and liquidity of bonds and supervises the credit rating agencies for China’s bond market. As such, the guidelines (e.g. China GB catalogue) issued by PBoC reflect their regulatory nature.

China GB catalogue criteria

- Conforming to national conditions: focusing on improving the ecological environment and easing resource pressure, and following the lead of national industrial policy at the current stage.
- Highlighting environmental benefits: supporting projects with marked environmental benefits and positive spillover effects.
- Being simple and clear: taking into account the fact that most of the capital market practitioners are non-environmental professionals, and thus employing definition and classification method that is easy to follow and operate.
- Making continuous adjustment: timely updating the Catalogue according to technological advancement, policy adjustment, standard updates and changes in resource and environmental conditions.
- Being in line with international practice: taking international standards and practices as reference to develop domestic definition and classification method, in order to facilitate international cooperation in green finance.

Key sustainability outcomes:
- i. Energy Saving.
- ii. Pollution Prevention and Control.
- iv. Clean Transportation.
- v. Clean Energy.
- vi. Ecological Protection and Climate Change Adaptation.

Example tables summarizing the review, comparisons and potential indicators are included in Annex I, II and III, for mobilization and mainstreaming respectively. As much as possible, original terminologies or language are preserved to allow for better examination of their details. In the medium-term, beyond the scope of this paper, the tables will be expanded to cover other existing national and international schemes and indicators to provide a consistent database.

V. SURVEYING GREEN FINANCE PRACTICES

In order to get a sense of what is being considered in practice as green finance and to learn how the green finance data is being used, the authors conducted a survey addressed to practitioners in member countries and institutions participating in the G20 Green Finance Study Group. The structure and list of questions of the
applied survey can be found in Annex IV at the end of this document. The questions of the survey are included in Annex IV with detailed charts and tables shown in Annex V.

At a glance the survey results revealed the following:

1. 47 survey responses were received at varying levels of completeness. 24 of which were from institutions/organizations representing the private sector, with the remainder from public finance institutions spread across and within 16 countries.
2. Survey participants showed a broad range of experience with tracking green finance, with respondents from three countries indicating no tracking at all.
3. 30 respondents indicated that they collect green finance related data, with 23 out of this 30 doing it for compliance with national legal obligations, regulations, and/or international processes and disclosure mechanisms.
4. There is a broadly consistent approach to defining green finance across the respondents. This common consideration of what is green includes the following sectors/activities: green buildings, renewable energy, energy efficiency and sustainable forestry/agriculture.
5. Other sectors such as conservation, carbon capture and storage, transport and adaptation are less consistently included, in particular by the private sector, reflecting also some country-specific nature of the definitions.
6. Some localized definitions include the following as green related: noise abatement, nuclear power plants, storm-water storage, sustainable shipping, green funds and financing instruments, capacity building for the identified sectors, and crop insurance.
7. Several of the respondents limit themselves to defining and measuring only climate finance, without going to the broader green, with some focusing this narrowly to sectors that contribute to climate change mitigation.
8. Respondents noted that data availability was critical to establishing the scope of their definition of what is green, with some areas of green finance being difficult to document and quantify. The challenges of data availability are further highlighted by only eight respondents having collected data prior to 2010, and even then on a very tightly defined basis.
9. Most of the respondents that are measuring or tracking green/climate finance only have started to do so in the last five years, with some starting as recently as 2016.

The following pages detail key sectors and activities being included in green finance, type of institutions that collect data on green finance and how data is being used by the respondents.
Q1: Sectors included in definition of "Green Finance"
Given the data challenges and the relative newness of the agenda, the majority of information being collected on green finance is at the national and sector specific level; few public sector agencies/institutions are measuring and tracking data at the more granular financial institution specific level, although this is increasingly common among the private sector respondents. Often there are no clear mechanisms or designated authorities for tracking green finance. Of the 30 respondents, some of whom are measuring and collecting data at various levels, over half of them gather information from capital markets. The other types of institutions that are a priority for data collection include financial and industry associations, private banks and regional/local authorities. This may signal the types of institutions with better data collection practices and existing disclosure requirements that facilitate measurement and information availability.

With respect to the data being collected, the emphasis, with 60 percent of respondents, is on the financial instruments being used for green finance e.g. loans, equity, grants etc. The other prioritized information being gathered relates to the users of green finance, impact indicators, and sources and distribution of green finance. There is limited tracking of the public and private share of green investments, leverage, and the tenor of finance provided. Some respondents indicated that they track investment practices (e.g. active ownership, integration) with respect to environment related issues, and environment themed funds or investing; others monitor elements related specifically to green bonds: investors, underwriters, issuers, use of proceeds, structure, form, and determining how 'green' investments the actually are.

The institutions collecting impact indicators focused on, among others: (i) The amount of absolute and of reduced GHG emissions for investments; (ii) the amount of private investments mobilized through subsidized projects; (iii) jobs created; (iv) energy savings in GWh; (v) green bond market issuers and total volume; (vi) sector relevant indicators e.g. hectares of forest, number of people protected from increased flooding, LEED status of buildings etc; (vii) ESG indicators and their materiality; (viii) reduction in predicted pollutants; (ix) air and water quality; (x) regional economic impacts; (xi) distribution of energy labels/certifications; (xii) compliance with ISO 26000 guidelines; (xiii) life cycle analysis; (xiv) co-benefits; and (xv) voluntary and compliance carbon markets.
The motivations for collecting this data vary across institutions and countries, including:

- Compliance with institutional, national and international reporting requirements;
- Meeting clean energy commitments
- Transparency for reputational purposes
- Sharing knowledge and best practice of each business entity
- Monitoring the performance of subsidized projects
- Evaluating, learning from, and benchmarking of projects financed
- Analyzing the green bond market to grow the speed of green investment
- Understanding the global industry’ progress and individual investor’ progress in responsible investment.
- Tracking institution specific involvement in/amount of financial flows to ‘green’ sectors.
- Maintaining an open and constructive dialogue with stakeholders and investees.
- Originating deals and certification of green projects.

There is some alignment between the motivations for collecting the data and how the data are used, with some additional uses including value for money assessments, and assessing and reporting on climate related actions and green bond impacts. Only forty-two percent of the respondents disclose the data that they collect.

Given the small sample size of the responses to the survey overall and to specific questions, it is not possible to draw broad conclusions at this stage. It is however clear that some types of financial institutions appear to be better placed to measuring and tracking green finance e.g. capital markets, associations and private banks. In order to facilitate more consistent and comprehensive data collection, it will be important to identify an internationally agreed core set of information and indicators that should be measured and reported on voluntarily, alongside locally appropriate requirements. This would enable easier aggregation of data that would be useful for establishing a baseline for green finance and for identifying trends across and within...
countries and sectors. Moreover, providing greater clarity on mechanisms, authorities to track green finance and consistent reporting procedures will significantly enhance transparency and data availability in this area.

VI. CHALLENGES AND RECOMMENDATIONS

The broad range of approaches to measuring green finance currently being used by countries and institutions reflect the relative newness and evolving nature of this agenda, and the diversity of national green growth objectives alongside which these metrics are implemented. In order to allow these markets to mature, to enable capital flows across countries and for new issuers to come to market, greater coherence is needed across definitions and metrics.

Generally consistent data and measurement is also necessary to allow for meaningful international comparisons and identification of trends in green finance across countries and within sectors. Moreover, it allows for assessment of volumes of green investments covered by existing policies and regulations. Without coherence on tracking, flows that could be related to green finance may be labelled differently and therefore not be accurately captured in estimates.

In advancing the measurement agenda and to allow for the comparability and aggregation of green finance assessment efforts, the following dimensions have been considered in this analysis as one way to organize different data and measurement efforts underway.

<table>
<thead>
<tr>
<th>Level / Key Criteria – Indicators</th>
<th>Efficacy</th>
<th>Efficiency</th>
<th>Resilience</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Financial System</td>
<td>IMF, IEA, OECD calculated fossil fuel subsidies</td>
<td>IMF, IEA, OECD calculated fossil fuel subsidies</td>
<td>Standard Setting Bodies defined standards for resilience from a financial stability perspective (BCBS, IAIS, IOSCO)</td>
<td>FSB Disclosure task force will focus on climate related financial disclosures – harmonize 400 standards</td>
</tr>
<tr>
<td>National Financial Sector</td>
<td>Fiscal policy determines subsidy level and carbon pricing</td>
<td>Fiscal policy determines subsidy level and carbon pricing</td>
<td>Several developing countries developed ESG standards</td>
<td>Every country/sector has own standard</td>
</tr>
<tr>
<td>Financial Institutions</td>
<td>Financial institutions calculate transaction cost – cost of intermediation</td>
<td>Financial institutions calculate transaction cost – cost of intermediation</td>
<td>Banks follow Basel Accord (capital for risk)</td>
<td>Institutions follow own standards</td>
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<td>Banks follow Basel Accord (capital for risk)</td>
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<td>Financial Institutions</td>
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<td>Banks follow Basel Accord (capital for risk)</td>
<td>Institutions follow own standards</td>
</tr>
<tr>
<td>Project / Financial Instruments e.g. Green Bonds</td>
<td>WBG – portfolio level ($, GHG)</td>
<td>WBG – portfolio level ($, GHG)</td>
<td>WBG – portfolio level ($, GHG)</td>
<td>WBG – transparent in dollars and GHG</td>
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<tr>
<td>Project / Financial Instruments e.g. Green Bonds</td>
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<td>WBG – portfolio level ($, GHG)</td>
<td>WBG – transparent in dollars and GHG</td>
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<tr>
<td>Project / Financial Instruments e.g. Green Bonds</td>
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<td>WBG – portfolio level ($, GHG)</td>
<td>WBG – portfolio level ($, GHG)</td>
<td>WBG – transparent in dollars and GHG</td>
</tr>
</tbody>
</table>
Generating consistent metrics is challenging given the lack of availability of data, the cost of access and the often high internal costs of measurement and verification for financial institutions. Often sources of primary data are quite limited, in part because data on private transactions is not made publicly available. Private sector data providers often bridge this gap on a commercial basis, thereby further raising the cost of generating and accessing this information. To better understand how different financial actors are acting on and tracking green finance, it is important to be aware of the gap between the types of financial and non-financial information that investors are seeking and that which is being supplied by corporates/issuers to assess the materiality of environmental, social, and economic risks and opportunities and their implications for value creation. Therefore it is important to assess what levers may be necessary to mobilize data on green finance and not just the specifics of what should be collected.

Moreover, there are challenges around attribution as there may be multiple goals associated with the financing, of which the purpose of green development may only be a small part. It is also challenging to measure the effectiveness of green finance when there are multiple policy instruments that may have an impact. Differences in thresholds for measurement, materiality and reporting, that are established locally make it difficult to align approaches. Understanding the scale and source of the flows, without having complementary contextual information on their triggers e.g. fiscal support, will make it difficult to compare across countries as the value of green investment may not be the same due to subsidies and other incentives.

Ultimately, given the diversity of green growth and other economic objectives within and across countries, having a coherent and comprehensive way to assess the flows and impacts of green finance can help countries better evaluate the merits of their approach vis-à-vis the trade-offs of different resource allocations.

The analysis to date lends itself to three recommendations that may be helpful to carry forward the measurement of progress on green finance:

i. Develop a better understanding of the alignment around what is covered by green finance, as initially highlighted by the survey responses (see page 11), solely with the intent to further illustrate the similarities and differences in the definitions being used. This is not with the intent to create one global definition.

ii. Gather data on the current share of green finance based on national definitions for the key market segments including banking, institutional investors, green bonds, and equities.

iii. Continue to develop means for reporting and aggregating data across the same categories (national, institutions, and instruments) perhaps instituting a periodic and improved survey across finance practitioners. A periodic and strengthened survey can contribute to have a baseline to measure progress on efforts to green the impacts of financial practices.

As the above recommendations are provided to kick start discussions, they should not be seen as final but as an input to this process.

# ANNEX I: Investment Indicators for Mobilizing Green Finance

<table>
<thead>
<tr>
<th>Category</th>
<th>France</th>
<th>Netherlands</th>
<th>US</th>
<th>US</th>
<th>UK</th>
<th>China</th>
<th>China</th>
<th>Bangladesh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Institutional investment</td>
<td>Institutional investment and banking</td>
<td>Equities</td>
<td>Equities</td>
<td>Bonds</td>
<td>Development finance</td>
<td>Bonds</td>
<td>Commerical Banking</td>
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<td><strong>Energy (supply side)</strong></td>
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<td>Energy efficiency</td>
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<td>Clean fuels</td>
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<td>Alternative energy</td>
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<td>Carbon capture and storage</td>
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## Draft for Discussion

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<td>Advanced materials</td>
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<td>Landfill gas</td>
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<td>Wastewater treatment</td>
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<td>Solid waste disposal</td>
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<td>Description</td>
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<td>Transport</td>
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<td>Green transportation</td>
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<td>Energy conservation from mass commuting</td>
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<td>Freight system and rail transport</td>
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<td>urban rail system</td>
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<td>hybrid vehicles</td>
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<td>alternative fuel vehicles</td>
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<td>rapid transit bus</td>
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<td>biofuels</td>
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<td>biofuel for aviation</td>
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<td>ICT</td>
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<td>Data center powered by renewable energy</td>
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<td>low carbon</td>
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<td>infrastructure products and technologies running on smart grid substitution technologies</td>
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<tr>
<td>Agriculture</td>
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<tr>
<td>Green agriculture</td>
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<tr>
<td>Less carbon intensive agriculture</td>
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<td>Ecofriendly agriculture/nutrition</td>
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<td>Item</td>
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<td>Less carbon intensive forestry</td>
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<td>Forest and landscape</td>
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<td>Protection of nature/environment</td>
<td>Land remediation and sustainable land management</td>
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<td>Water supply</td>
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<td>Clean water</td>
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<td>Clean air</td>
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<td>Biodiversity</td>
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<td>Ecological protection</td>
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<td>Ecological restoration and disaster prevention</td>
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<td>Adaptation</td>
<td>Adaptation to water</td>
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<td>Infrastructures</td>
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### ANNEX II: ESG Risk Management Principles or Requirements for Mainstreaming Green Finance

<table>
<thead>
<tr>
<th>UNPRI</th>
<th>South Africa</th>
<th>Brazil</th>
<th>China</th>
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</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td><strong>Institutional investors</strong></td>
<td><strong>Institutional investors</strong></td>
<td><strong>Banks</strong></td>
</tr>
<tr>
<td><strong>Incorporate ESG issues into investment analysis and decision-making processes.</strong></td>
<td>ESG should be incorporated into the investor’s investment analysis/activities as part of the delivery of superior risk-adjusted returns.</td>
<td>Social and Environmental Responsibility Policy (PRSA) should be established and contain principles and guidelines that direct the actions of socio-environmental nature in the businesses and in the relationship with the stakeholders. The institution must establish an action plan aiming at implementation of the PRSA. This action plan will define the actions required for the adequacy of the organizational and operational structure of the institution, if necessary, as well as the routines and procedures to be carried out in accordance with the guidelines of the policy, according to a schedule specified by the institution.</td>
<td>Banking institutions shall establish and constantly improve the policies, systems and processes for environmental and social risk management and identify the directions and priority areas for green credit support.</td>
</tr>
<tr>
<td><strong>Definition</strong></td>
<td><strong>Social and environmental risk means the possibility of loss of the institution arising from social and environmental damage. The institution must establish specific criteria and mechanisms of risk assessment.</strong></td>
<td><strong>Banking institutions shall develop client environmental and social risk assessment criteria, dynamically assess and classify client environmental and social risks. The scope of due diligence on environmental and social risks shall be defined according to the characteristics of the sector and region in which the client and its project is located. Banking institutions shall examine the compliance of clients to whom credit will be granted and develop compliance checklist and compliance risk checklist.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Governance</strong></td>
<td><strong>Be active owners and incorporate ESG issues into our ownership policies and practices.</strong></td>
<td>An institutional investor should recognise the circumstances and relationships that hold a potential for conflicts of interest and should pro-actively manage</td>
<td>To ensure the fulfillment of the goals and guidelines of the PRSA, the institution must keep governance structure compatible with its size, the nature of its business, the complexity of the offered services and products, as well as with its activities and adopted processes and systems. The institution can establish a Committee on Social and</td>
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<td>Draft for Discussion</td>
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<tr>
<td>Process</td>
<td>The social and environmental risk management of the institution must consider: (i) systems, routines and procedures to identify, qualify, evaluate, monitor, mitigate and manage the social and environmental risk in the activities and transactions of the institution; (ii) data registry concerning effective losses due to social and environmental damage, for a minimum period of five years, including values, type, location and economic sector object of the transaction; (iii) prior assessment of the potential social and environmental impacts from new forms of products and services, including in relation to the reputation’s risk; and (iv) procedures for adequacy of social and environmental risk management to the legal, regulatory and market changes.</td>
<td>Banking institutions shall examine the compliance of clients to whom credit will be granted; strengthen credit approval management, and define reasonable level of credit granting authority and approval process according to the nature and severity of environmental and social risks faced by the clients; by improving contract clauses, urge their clients to strengthen environmental and social risk management; enhance credit funds disbursement management; strengthen post-loan management; and strengthen the environmental and social risk management for overseas projects</td>
<td></td>
</tr>
<tr>
<td>Review</td>
<td>Institutional investors should ensure that this policy is implemented and establish processes to monitor compliance with the policy.</td>
<td>This governance structure must provide conditions for the exercise of the following activities: (i) implement actions within the framework of the PRSA; (ii) monitor compliance with the established actions on the PRSA; (iii) assesses the effectiveness of implemented actions; (iv) verify the adequacy of the social-environmental risk management established in the PRSA; and (v) identify any shortcomings in the implementation of the actions. The PRSA subject to evaluation every five years</td>
<td>Banking institutions shall incorporate green credit implementation into the scope of internal compliance examination, and regularly organize and carry out internal auditing on green credit. Banking institutions shall establish effective green credit appraisal and evaluation system and reward and penalty system.</td>
</tr>
<tr>
<td><strong>Disclosure</strong></td>
<td>Seek appropriate disclosure on ESG issues by the entities in which we invest. Report on our activities and progress towards implementing the Principles.</td>
<td>Institutional investors should be transparent about the content of their policies, how the policies are implemented and how CRISA is applied to enable stakeholders to make informed assessments.</td>
<td>The institution must formalize the PRSA and ensure its internal and external disclosure; and maintain documentation relating to the PRSA at the disposal of Bacen.</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td>Promote acceptance and implementation of the Principles within the investment industry. Work together to enhance our effectiveness in implementing the Principles.</td>
<td>Where appropriate, institutional investors should consider a collaborative approach to promote acceptance and implementation of the principles of CRISA and other codes and standards applicable to institutional investors.</td>
<td>Banking institutions shall strengthen green credit capacity building, establish and improve green credit labeling and statistics system, improve relevant credit management systems, enhance green credit training, develop and employ related professionals.</td>
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</table>
## ANNEX III: Outline Approach for Measuring Green Finance and Corresponding Internationally Comparable Indicators

<table>
<thead>
<tr>
<th>Financial Institution/Instrument</th>
<th>Total Assets (USD)</th>
<th>Mainstreaming (ESG Compliance)</th>
<th>Mobilizing (Green Finance - Thematic Investing)</th>
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<tbody>
<tr>
<td><strong>Banks</strong></td>
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</table>
|                                  | 98.4 trillion (2014; commercial banking)\(^{14}\) | National Standards:  
- China CBRC Green Credit Guidelines – 10 percent of banking assets (total banking assets – 134.8 trillion RMB 2014)\(^{15}\)  
- Bangladesh Green Banking Principles – banking assets covered  
- Brazil FEBRABAN ESG framework coverage | Green Credit Provided by country |
|                                  | - Total Credit (2014) |                                |                                               |
|                                  | - 260.2 billion (2014)\(^{16}\) Total Annual Global Project Finance Loan Activity | International standards:  
- Equator Principles – 82 Signatories  
- IFC Performance Standards coverage | - Equator Principles Project Finance loans 2014  
- IFC FI’s Green Lending (forthcoming in June 2016)  
- Renewable Energy Finance - $329 billion (2015)\(^{17}\)  
- Energy Efficiency Investment in Buildings – 90 billion (+/-10%; 2014; not limited to banking)\(^{18}\) |
| **Institutional Investors**       |                    |                                |                                               |
|                                  | National Standards: |                                |                                               |

\(^{14}\) Bankscope  
\(^{17}\) [http://www.bloomberg.com/company/clean-energy-investment/#form](http://www.bloomberg.com/company/clean-energy-investment/#form)  
<table>
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<th>Draft for Discussion</th>
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<tr>
<td>- Pension Funds</td>
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<td>- Insurance</td>
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<td>- Sovereign Wealth Funds</td>
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<tr>
<td>International Standards:</td>
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<tr>
<td>- France Article 48 of Energy Transition Law coverage</td>
</tr>
<tr>
<td>- South Africa – Regulation 28 of South African Pension Fund Act coverage</td>
</tr>
<tr>
<td>- Carbon Disclosure Project – 822 banks and institutional investor signatories with $95 trillion AUM</td>
</tr>
<tr>
<td>- UN PRI – 1513 Signatories with $59 trillion AUM</td>
</tr>
<tr>
<td>- Montreal Pledge – 120 investors with $10 trillion AUM – measuring and disclosing portfolio carbon footprints (^{20})</td>
</tr>
<tr>
<td>- Portfolio Decarbonization Coalition – 25 members with $3.2 trillion AUM decarbonizing $600 billion(^{21})</td>
</tr>
<tr>
<td>- ESG Integration - $12.9 trillion (2014)(^{22})</td>
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<tr>
<td>- IRIS – impact investing framework used by 181 investors and managers</td>
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<th>Bonds</th>
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<tr>
<td>87.8 trillion (2015; debt securities outstanding)(^{26})</td>
</tr>
<tr>
<td>China PBOC Green Bond Catalogue</td>
</tr>
<tr>
<td>$42 billion issuance 2015 globally (labelled bonds)</td>
</tr>
</tbody>
</table>

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\(^{20}\) http://unepfi.org/pdc/

\(^{21}\) http://unepfi.org/pdc/


\(^{24}\) http://www.statista.com/statistics/270998/worlds-largest-insurance-companies-by-total-assets/

\(^{25}\) http://www.swfinstitute.org/sovereign-wealth-fund-rankings/

\(^{26}\) http://www.bis.org/statistics/c1_pdf
<table>
<thead>
<tr>
<th>Equities</th>
<th>13.4 trillion (2014; net assets)</th>
<th>- World Federation of Exchanges Sustainability Working Group – 22 Exchanges</th>
<th>- Dow Jones Sustainability Indices - value</th>
</tr>
</thead>
</table>

| - India Securities and Exchange Board Green Bond Requirements |
| - Green Bonds Principles – 110 bond issuer members |
| - Climate Bonds Standards27 |
| - Barclays MSCI Green Bond Index28 |

- $15 billion issuance in China (Jan 2016) |
- $597.7 billion climate-aligned green bonds outstanding (2015; unlabeled bonds)29 |

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27 [http://www.climatebonds.net/standards/taxonomy](http://www.climatebonds.net/standards/taxonomy)
28 [https://www.msci.com/resources/factsheets/Barclays_MSCI_Green_Bond_Index.pdf](https://www.msci.com/resources/factsheets/Barclays_MSCI_Green_Bond_Index.pdf)
ANNEX IV: Survey on Approaches to Measuring Green Finance

The G20 Green Finance Study Group (GFSG) is examining the role of the financial sector in supporting sustainable development and green growth. Advancing ways to measure progress in greening the financial system will be critical for overall progress on this agenda. The World Bank Group has been asked to support the GFSG in its efforts, and as part of this process we are seeking to do a stock-taking of the different approaches to measuring and monitoring progress on greening finance, that are utilized at varying levels of granularity within the financial sector, across the G20 member countries. This stock-taking will rely primarily on inputs from GFSG member countries and financial institutions to be provided through this survey on approaches to measuring green finance that are applied domestically.

The information collected via the survey will be used to highlight case-studies of different practices across countries and types of financial institutions. This brief survey has been developed to allow us to identify what is currently being measured and reported, and the underlying criteria/definitions being used to do this, and see what lessons from these approaches can be capitalized by the G20 to improve the sustainability of the global financial system.

We would welcome your assistance in completing the survey by 15 March 2015, in keeping with the proposed time lines for completion of the reports.

1. Please enter the respondent’s information:
   a. Name:
   b. Country:
   c. Agency/ Organization/ Institution:
   d. Position:
   e. Email:

2. What sectors do you include in your definition of “Green Finance”? Select all that apply:
   a. Adaptation:
      i. Adaptation of infrastructure
      ii. Conservation, bio-system adaptation
      iii. Disaster prevention/risk management
   b. Carbon capture & storage
   c. Energy and energy efficiency:
      i. Cogeneration
      ii. Energy distribution for renewables
      iii. Energy efficient products
      iv. Industrial energy efficiency
      v. Smart grid
   d. Environment protection
i. Soil remediation
ii. Pollution control, prevention and treatment
iii. Biodiversity conservation
iv. Ecological restoration
v. Nature protection

e. Green buildings

f. Green products and materials

g. Renewable energy
   i. Biomass
   ii. Geothermal
   iii. Hydro
   iv. Solar
   v. Wind
   vi. Ocean

h. Sustainable land management
   i. Sustainable Agriculture
   ii. Sustainable forestry

i. Transport
   i. Rail
   ii. Urban rail/metro
   iii. Electric vehicles
   iv. Hybrids
   v. Alternative fuel vehicles
   vi. Bus Rapid Transit
   vii. Bicycle
   viii. Biofuels
   ix. Biofuels for aviation
   x. Transport logistics

j. Wastes
   i. Waste–to–energy
   ii. Recycling
   iii. Waste management
   iv. Solid and hazardous waste disposal

k. Water
   i. Water efficiency/conservation
   ii. Water supply
   iii. Wastewater treatment
3. Are you collecting data on green finance:
   a. Yes
   b. No

*Please note that if you answer "No" you will be redirected to the end of the survey.*

4. If you are collecting data, when did you start collecting the data and how frequently is this collected? If you are not collecting data, type "n/a" in this box.

5. How is the data collected? Select all that apply:
   a. Online
   b. Written Reports
   c. Surveys
   d. Other (please specify):

6. At what level are you collecting data on green finance? Select all that apply:
   - National
   - Subnational
   - Local
   - Financial institution specific
   - Public finances
   - Sector specific tracking of financing (e.g. renewable, energy efficiency, water management, etc.)
   - Other (please specify):

7. From which types of institutions are you collecting data? Select all that apply:
   - Capital Markets
   - Financial Associations
   - Financial regulators
   - Import/Export Custom Authorities
   - Industry Associations
   - Insurance
   - Leasing Companies
   - Microfinance institutions
   - Ministry of Finance
   - National Investment Agencies
   - Pension Funds
   - Private Banks
   - Regional/Local authorities
   - Regional/local financial institutions
   - State Banks
   - Tax Authorities
   - Other (please specify):
8. What data are you collecting? Select all that apply:
   a. Share of green investment in overall investments
   b. Impact indicators
   c. Sources of finance
   d. Users of green finance
   e. Distribution of green finance
   f. Leverage or mobilized finance
   g. Public and private share of green finance
   h. Financial instruments used: loans, equity, grants, guarantees, concessional finance etc.
   i. Tenor of finance provided
   j. Other (please specify):

9. If you collect impact indicators, what impact indicators are collected and monitored or intended for collection in the future? Please specify.

   Examples of relevant indicators include: jobs created, air quality time series, water quality time series, GHG emissions reductions, number of hectares of forest preserved, and energy savings in GWh as a consequence of green finance within boundaries of projects/activities financed.

10. Why are you collecting these types of data (Q.8) and indicators (Q.9)?

   Please specify:

11. Is the data collected disclosed?
   a. Yes
   b. No

12. How are the data used? Select all that apply:
   a. Carbon risk assessment
   b. Assessing private investment flows
   c. Assessing volumes of investments covered by existing policies and regulations
   d. Assessing impact of financial flows
   e. Identifying trends across and within sectors
   f. Resource risk assessments
   g. Improve national policies, planning and regulations
   h. Other (please specify):

13. Is the data collected on a mandatory or voluntary basis? Check option that applies:
   a. Mandatory
   b. Voluntary

If you specified yes to Mandatory please proceed to question 14

If you specified yes to Voluntary please proceed to question 19

Mandatory Reporting:
14. What are the mechanisms/procedures used to track green finance? Select all that apply:
   a. National legal obligations and regulations
   b. International processes and disclosure mechanisms
   c. Other (please specify):

15. Which authority is responsible for collecting green finance data?

16. What are the reporting procedures used by the data providers?
   a. Green credit guidelines – please specify:
   b. Industrial/sector standards – please specify:
   c. International standards – please specify:
   d. Environmental, Social and Governance (ESG) regulations – please specify:
   e. Other (please specify):

17. How is the data recorded and organized?
   a. Databases
   b. Published reports
   c. National statistics
   d. Other (please specify):

18. Please provide links to relevant procedures, regulations, standards, publicly available databases, legal documents etc.

**Voluntary Reporting:**

19. What are the mechanisms/procedures used to track green finance? Please specify:

20. Which authority is responsible for collecting green finance data?

21. What are the reporting procedures used?
   a. Green credit guidelines – please specify:
   b. Industrial/sector standards – please specify:
   c. International standards – please specify:
   d. Environmental, Social and Governance (ESG) regulations – please specify:
   e. Other (please specify):

22. How is the data recorded and organized?
   a. Databases
   b. Published reports
   c. National statistics
   d. Other (please specify):

23. Please provide links to relevant procedures, regulations, standards, publicly available databases, legal documents etc.
# ANNEX V: Results of Survey on Approaches to Measuring Green Finance

**Q5: How is the data collected?**

<table>
<thead>
<tr>
<th>Method</th>
<th>Private</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Systems &amp; Databases</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Online</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Online, Written</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Online, Written, Surveys</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Surveys</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Written</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Written, Surveys</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>No formalized data collection - use of existing sources of information</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**Q6: Level of Data Collection (33 respondents)**

- Financial Institution Specific: Public Sector 11, Private Sector 4
- Local: Public Sector 11, Private Sector 4
- National: Public Sector 11, Private Sector 4
- Public Finances: Public Sector 6, Private Sector 4
- Sector specific tracking of financing: Public Sector 12, Private Sector 4
- Sub-National: Public Sector 5, Private Sector 4

![Data Collection Graph](chart.png)
Q8: What data are you collecting?

<table>
<thead>
<tr>
<th>Data Category</th>
<th>Private Sector</th>
<th>Public Sector</th>
<th>Total</th>
<th>Percentage of Respondents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of green investment in overall investments</td>
<td>8</td>
<td>3</td>
<td>11</td>
<td>36.67</td>
</tr>
<tr>
<td>Impact indicators</td>
<td>10</td>
<td>6</td>
<td>16</td>
<td>53.33</td>
</tr>
<tr>
<td>Sources of finance</td>
<td>7</td>
<td>6</td>
<td>13</td>
<td>43.33</td>
</tr>
<tr>
<td>Users of green finance</td>
<td>8</td>
<td>8</td>
<td>16</td>
<td>53.33</td>
</tr>
<tr>
<td>Distribution of green finance</td>
<td>7</td>
<td>6</td>
<td>13</td>
<td>43.33</td>
</tr>
<tr>
<td>Leverage or mobilized finance</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>26.67</td>
</tr>
<tr>
<td>Public and private share of green finance</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>20.00</td>
</tr>
<tr>
<td>Financial instruments used: loans, equity, grants, Guarantees, concessional finance etc.</td>
<td>9</td>
<td>9</td>
<td>18</td>
<td>60.00</td>
</tr>
<tr>
<td>Tenor of finance provided</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td>30.00</td>
</tr>
<tr>
<td>Total responses</td>
<td>60</td>
<td>50</td>
<td>110</td>
<td></td>
</tr>
</tbody>
</table>

Q11: Is the data collected disclosed?

- Yes: 20
- No: 17
- N/A: 10

Total responses: 110
Q13: Is the data collected on a mandatory or voluntary basis?

- Mandatory: 23
- Voluntary: 7

Draft for Discussion
ANNEX VI: Links to websites detailing green finance related initiatives:

http://www.ftserussell.com/index-series/index-spotlights/green-revenues

www.unpri.org

http://web.unep.org/inquiry

http://www.carbonpricingleadership.org/

www.sasb.org

http://integratedreporting.org/

http://www.naturalcapitaldeclaration.org/


http://www.ghgprotocol.org/Portfolio_Carbon_Initiative

www.cdp.net

www.equator-principles.com

www.cbrc.gov.cn/chinese/files/2012/E9F158AD3884481DBE005DFBF0D99C45.doc


http://ec.europa.eu/finance/company-reporting/non-financial_reporting/index_en.htm


http://unepfi.org/pdc/

http://montrealpledge.org/

https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000031044385&categorieLien=id


https://www.climatebonds.net/

