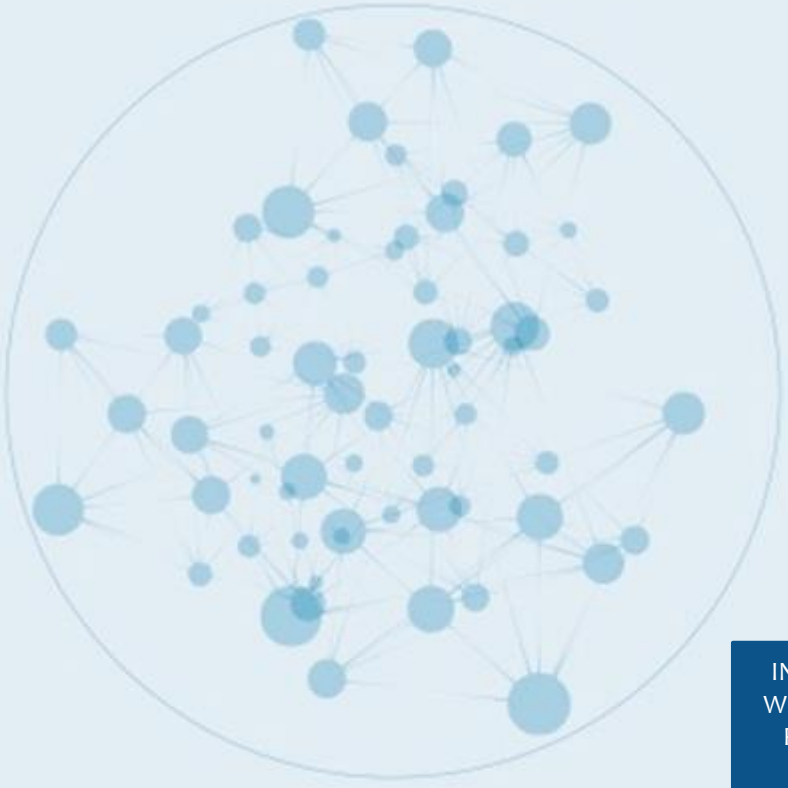
Inquiry: Design of a Sustainable Financial System

UNEP

GREENING THE BANKING SYSTEM

Taking Stock of G20 Green Banking Market Practice



INQUIRY WORKING PAPER

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The UNEP Inquiry

The Inquiry into the Design of a Sustainable Financial System has been initiated by the United Nations Environment Programme to advance policy options to improve the financial system's effectiveness in mobilizing capital towards a green and inclusive economy—in other words, sustainable development. Established in January 2014, it published its final report, The Financial System We Need, in October 2015 and is currently focused on actions to take forward its findings.

More information on the Inquiry is at: *www.unep.org/inquiry* and *www.unepinquiry.org* or from: Ms. Mahenau Agha, Director of Outreach *mahenau.agha@unep.org*.

About this report

This input paper has been prepared by the authors as a contribution to the G20 Green Finance Study Group (GFSG) but has not been endorsed by it nor does it represent the official views or position of the GFSG or any of its members.

Comments are welcome and should be sent to *nick.robins@unep.org*.

Acknowledgements

Nick Robins and Jeremy McDaniels are the authors of this paper.

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Practice

This paper takes stock of G20 experience with green banking, focusing on market practice. It assesses the evolving green banking agenda, focusing on *mainstreaming* and *mobilization*, drivers of progress, and key barriers. It concludes with a set of options for consideration by the G20.

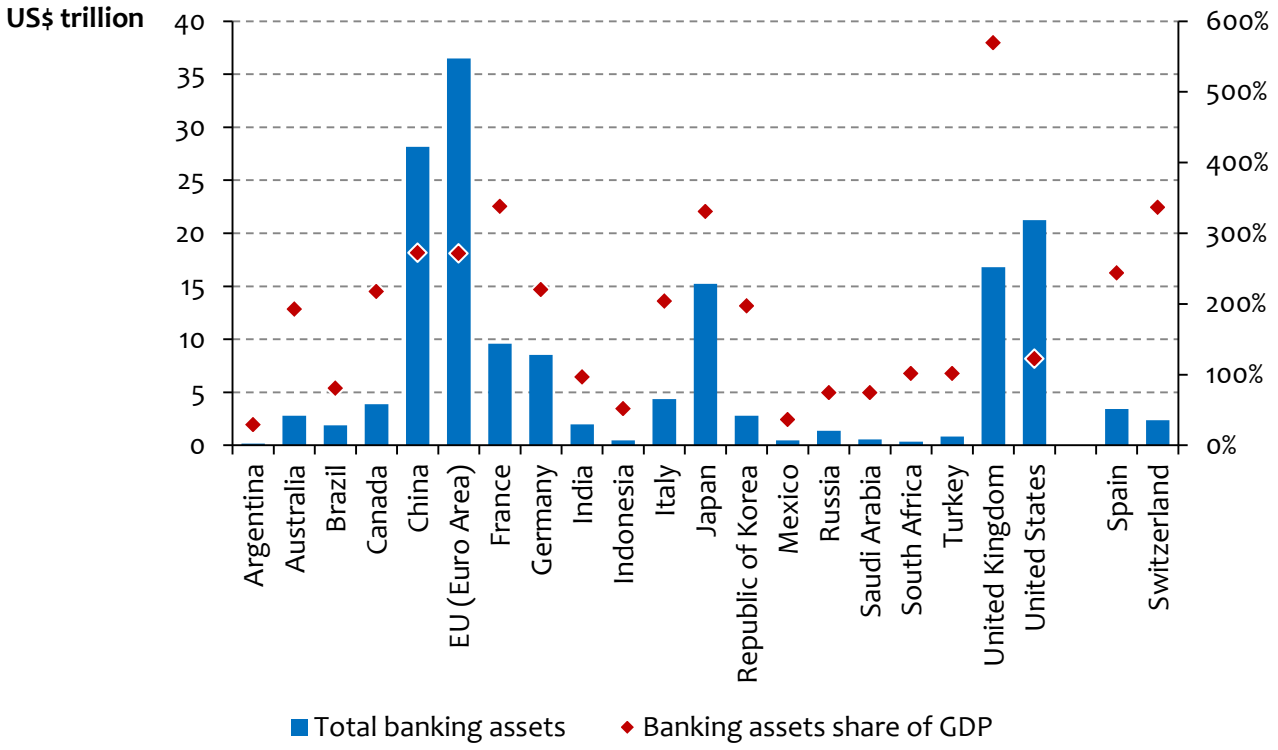
This paper has been developed by the G20 Green Finance Study Group (GFSG) Secretariat, on the basis of:

- A literature review of key developments and current themes in green banking, market-led initiatives, and public action;
- A survey process engaging leading banks from G20 countries, including telephone interviews and a written questionnaire (Appendix A),
- An interview process with relevant international initiatives and associations.

Context

G20 banking sectors are highly differentiated in industry structure and concentration, composition of balance sheets, business models, and size in relationship to the broader economy[1] (Figure 1). In certain countries, banking is the dominant financial sector concentration. This is especially the case in G20 emerging markets, where banks remain the primary funding channel.

Figure 1: Banking Assets in G20 Countries



Sources: FSB Shadow Banking Monitoring Dataset 2015,[2] IMF WEO Database 2015.[3] Note: Banks refer to the broader category of deposit-taking institutions. Asset figures refer to financial assets where available, otherwise total assets. Converted to US$ at the end of the period (November 2015) using market rates.

Executive Summary

Green banking practices are at different stages of evolution across the G20. Emerging green banking practices across G20 countries can be grouped into two categories:

- Mainstreaming environmental factors across bank strategy and governance, evolving from an early focus on due diligence at project level to consideration of environmental factors across credit risk functions. Now the focus is shifting to more strategic action, with leading banks exploring environmental stress testing and links between environmental and financial performance.
- Mobilizing capital for specific green assets through loan origination, the provision of credit and savings' products as well as capital markets activities. Banks are the primary source of funding for renewable energy investments, and critical sources of capital for infrastructure and small and medium enterprises (SMEs). Now, banks are moving from "risk to opportunity" in new sectors, such as energy efficiency, with leading banks working to drive positive impact across all activities.

A diverse range of sector-specific market and policy factors has motivated the evolution of the green banking agenda. Key catalysts for action include rising public expectations, the recognition of environmental issues as real drivers of financial risk and identification of green loan origination opportunities. Green banking progress in the G20 has largely been the result of market-led action, including individual institutional leadership, the collective efforts of banking associations, and international initiatives. Some governments and regulators across the G20 are taking action to support the greening of the banking system. Public finance can play a catalytic role in making the business case for green banking, through risk sharing and incentive mechanisms to address market failures and leverage private capital.

Barriers to green banking can be understood in a general hierarchy of importance and challenge:

- A lack of real economy demand, stemming from the presence of unmitigated externalities or policy uncertainty;
- The lack of a clear business case, where risk/return profiles of potential projects are unbankable;
- Negative impacts on competitiveness and a lack of a level playing field;
- A lack of appropriate practitioner capacities or a supportive financial culture;
- A lack of appropriate information flowing between the market and banks; and
- Issues of policy coherence and regulatory alignment.

Several conclusions can be drawn regarding green banking market practice in the G20:

- There is some convergence in practitioner understandings of green banking, but perceptions and priorities vary significantly across the G20.
- The lack of a global framework or body to structure green banking practice (in comparison to investment, for example) may be holding back progress.
- The success of efforts to greening the banking system is contingent on levels of financial system development and broader environmental regulatory contexts.
- There is an emerging rationale for public action to support greening of the banking system – as closely linked to long-term economic growth as it is to sustainability.

G20 countries have committed to realignment of growth pathways with sustainable development – as evidenced by recent Intended Nationally Determined Contributions (INDCs) and agreement of the Sustainable Development Goals (SDGs). Meeting these goals while maintaining economic growth is the defining challenge for the G20 over the coming decade. A thriving green banking sector can play a fundamental role in this effort – provided governments are able to deliver a level playing field, share emerging best practices, and unlock new opportunities for investments in sustainable growth.

Emerging policy options include:

- Develop comprehensive voluntary principles;
- Clarify green definitions;
- Develop green securities to support maturity alignment;
- Use public finance to leverage green loans and credit;
- Enhance professional education;
- Develop national collaborative processes;
- Expand global learning networks;
- Collect data and improve disclosure; and
- Support policy alignment.

1 The State of Green Banking Market Practice

1.1 The Evolving Green Banking Agenda

Action to incorporate critical environmental factors into the banking system has been gathering momentum across the G20, with activities in some G20 countries under way for over two decades.[4] Momentum towards a wider sustainable banking shift is accelerating as market and policy factors are driving firms to consider a range of environmental, social, and governance (ESG) risks and opportunities in their operations, financing, and capital raising activities.

Green banking practices are at different stages of evolution across the G20, reflecting variation in broader national financial and economic circumstances. Most green investments across the G20 are financed at least in part through banks. Financing models vary from short-term corporate lending to non-recourse specialized lending – with banks currently providing roughly 80% of green infrastructure finance. In some markets, larger banks provide critical intermediary services to channel institutional capital to green assets.

In certain G20 countries the case for green banking has been clearly made, evidenced by increasing allocations of bank capital to green assets, individual institutional leadership and public commitments, new sector-wide green banking protocols, growing support for international voluntary principles, and the implementation of targeted policy and regulatory actions.[5] While progress has been slower in countries at earlier stages of financial system development, the green banking agenda is now being realized as a critical opportunity to support inclusive and sustainable economic growth.

Emerging green banking practices across G20 countries can be grouped into two categories:

1. **Mainstreaming environmental factors across bank strategy and governance, risk management functions, as well as culture and skills.** These actions are often part of a wider trend to promote sustainable banking practices, managing both the environmental and social dimensions of financial activity. While the driving objective has been to avoid or mitigate financial losses, reputational risk, and social and environmental harm, leading banks are now working to achieve to achieve positive impact across all activities.
2. **Mobilizing private capital for green investments, including funding through loan origination and credit provision, retail savings products, as well as intermediation and capital markets activities.** Notable capital markets actions include the integration of environmental and social (E&S) factors in investment research, and equity and debt raising for green sectors.

This evolving agenda is broad – and while some leading banks are taking comprehensive approaches, most banks are only addressing individual dimensions. Diverse experiences across the G20 suggest that banks' responses to E&S risks and opportunities may be influenced by size, ownership structures and balance of lending vs. capital markets activities – as well as broader market and policy contexts. In countries where banking and securities businesses are still largely segregated, green banking mainly refers to green loan origination. For countries where universal banking is practiced, underwriting of green equity Initial Public Offerings (IPOs) and green bonds as well as sales/trading of green assets are also part of green banking activities.

The breadth of the green banking agenda is summarised in Table 1 below.

Table 1: The Breadth of the Green Banking Agenda

Function	Mainstreaming	Mobilizing
Credit and Lending	Ensuring environmental and social due diligence in credit decisions Assessing loan portfolios for emerging environmental and social risks Enhancing the positive performance and impact of lending	Extending green credit to key retail sectors, such as energy efficient housing Extending green credit to a broadening range of commercial sectors, such clean energy, clean transport, green buildings, water and sanitation
Savings	Reducing environmental impacts of banking operations	Offering green savings products to retail customers
Capital Markets	Integrating environmental and social risks into investment research, including sell-side equity & credit research	Raising capital through equity market placements and IPOs Raising capital through debt market underwriting of green bonds
Overall	Monitoring and reporting environmental risks and performance	Tracking and reporting flows of green credit and financing

1.2 Mainstreaming

Section Overview

Awareness of the importance of environmental factors for banking business models has been increasing across G20 countries, reflecting greater recognition of the importance of sustainable development in environmental and economic policies.

The advance of the mainstreaming agenda has been driven by the need to understand the impacts of environmental risks to credit and lending portfolios. This need has emerged in response to both internal and external pressures – including mitigation of financial risks stemming from loans to higher risk corporate sectors, reputational factors and pressure from civil society groups. In certain G20 countries, this evolution was motivated in part by new legislative frameworks clarifying "lender liability" of financial institutions for environmental harm caused by borrowers.[6]

The mainstreaming agenda has evolved from an early focus on due diligence at project level to consideration of environmental factors across credit risk functions. Now, the focus is shifting within some banks to more strategic action – tackling the green finance challenge by integrating E&S priorities into the core business model, linking efforts across risk management, strategy, governance and capacity building. For major international banks, this imperative has translated into capital markets, where E&S factors are being integrated into sell-side equity and credit research. Leading banks are enhancing the sophistication of these efforts, developing new methodologies for environmental risk analysis and valuing natural capital, and examining links between environmental and financial performance.

1.2.1 Maturing Dimensions

Due diligence in project finance

Established in 2003, the Equator Principles (EPs) are a framework for managing E&S risk in project finance, designed to reduce credit and operational losses. Following revisions in 2006 and 2013, the EPs

now also are applicable to project finance advisory services, project-related corporate loans and bridge loans. As of February 2016, 83 financial institutions in 36 countries have officially adopted the Equator Principles. The EPs report that the principles represent over 70% of international project finance debt in emerging markets. However, the lack of a reporting standard means that disclosure on implementation of the principles is often insufficient to assess the actual impacts on financial risk, or environmental performance.[7] Certain banks note that the perceived global application of the EPs across portfolios of signatory institutions may problematic, as the EPs do not represent a broader range of financing mechanisms and infrastructure transactions (such as the use of special purpose vehicles).

Integrating environmental factors in risk assessment

Most major international banks across the G20 have developed methodologies and implemented procedures to integrate environmental factors into risk management systems, including customer credit and lending evaluation. Approaches vary considerably in terms of scope and breadth of factors considered, governance and management, and relationship to broader sustainability strategies:

- **Barclays** has embedded environmental risk management within its wholesale credit risk process, obliging all credit risk teams across the group to follow policies on environmental factors. In addition, relationship managers are required to engage with clients on environmental challenges and opportunities.
- **ICBC** imposes an industrial limit to all industries with serious overcapacity to prevent risks and scales back loans to the fields relating to heavy metal emission and highly hazardous chemicals – with loans to the steel sector being reduced by approximately US$7.45 billion since 2013.
- **Garanti Bankasi** established Environmental and Social Loan Policies and an accompanying assessment process in 2011/12, which act as a screen for loan requests. Projects above US$10 million are subject to an Environmental and Social Impact Assessment Model, which is used to calculate a risk rating to guide financing decisions.[8]
- **UniCredit** recently established a Group Economic Environmental and Social Council to oversee all activities relating to environment at Group level, including operations management, risk governance, internal capacity building and monitoring.[9] This includes the implementation of special credit policies for financing and corporate lending for large dams, nuclear energy, mining and coal-fired power generation. Qualitative survey information taken when applying for credit is translated into a rating weight, which may affect decisions.
- **Yes Bank's** Environmental and Social Policy draws from the EPs, International Financial Corporation (IFC) guidelines and international best practices, covering negative environmental impacts due to project financing.

1.2.2 Emerging Dimensions

Environmental 'Stress Testing' and Scenario Analysis

A few leading banks are actively innovating to enhance the sophistication of environmental risk assessment across portfolios, including through the exploratory efforts to 'stress test' portfolios against market and policy risks stemming from environmental factors.

Environmental Stress Testing: the ICBC Experience

In March 2016, ICBC released a research paper assessing the impact of environmental factors on credit risk of commercial banks, presenting the first environmental stress test conducted by a Chinese bank.[10] The paper sets out a framework for transmission mechanisms of environmental risk, focusing on the impact of environmental standards and climate policies, exposure to joint and several liability assumed by banks pollution and changes in reputational standing resulting from the mismanagement of environmental risks.

Stress tests of thermal power and cement firms are conducted by estimating corporate performance under stress scenarios, assessing impacts on income and balance sheets, translating financial indicators to customer credit ratings and evaluation models, and finally assessing changes in credit ratings and impacts on loan quality. Enhanced environmental protection standards are found to impose greater cost pressures on the thermal power industry, especially on small- and medium-sized firms, where credit rating downgrades of AA-rated and above firms expected for 68%, 75%, and 81% of firms under low, medium and high stress scenarios to 2020. In the cement industry, where low growth and overcapacity are expected to impose financial pressure, credit rating downgrades may affect 48%, 62%, and 81% of AA-rated and above firms.

ICBC's exercise represents several key innovations for stress testing practice, including the inclusion of complex interrelated policy and market factors as opposed to a single low-probability, high impact event scenario, as well as the consideration of both first round and corresponding feedback effects. ICBC concludes that incorporating environmental risks into credit rating systems for firms is likely to affect the cost of capital for commercial bank funding, ultimately promoting greener economic development.

Valuing Natural Capital

As the sophistication of environmental risk assessment increases, banks are now looking to a broader range of environmental risk factors – including natural capital. The Natural Capital Declaration (NCD) is a voluntary, market-led finance sector initiative to integrate natural capital considerations into loans, equity, fixed income and insurance products.[11] The NCD currently has 29 signatory institutions participating as working group members, and 12 institutions participating as observers. Working with its institutions, the NCD has developed range of tools for financial institutions to integrate natural capital considerations, including tools to assess water risk within corporate bonds, and deforestation risk within agricultural commodity value chains.[12]

Linking Financial and Environmental Performance

Understanding links between environmental performance and the financial quality of assets – such as default ratios or non-performing loans – is a new area of focus for banks and other financial institutions. In Brazil, Itau is undertaking work to correlate its green economy and mainstream portfolios with financial indicators, drawing on both public and internal data. Banks note that these efforts, while critical to supporting the broader business case for green banking, remain complex. Clear attribution of positive or negative delta to environmental factors is made difficult by myriad variables affecting credit quality, heterogeneity within client sub-sectors, and a lack of detailed data.

1.3 Mobilization

Section Overview

Efforts to increase green capital mobilization have increased across the G20 as banks look to access new business opportunities in financing the transition to low-carbon growth through green loan origination, new products and services, and capital markets activities.

In developed G20 countries, mobilization expertise has developed in parallel with the roll-out of green technologies, primarily clean energy infrastructure. In developing G20 countries, mobilization priorities are expanding from social development – such as financial inclusion and electrification – to sustainable growth, including pollution abatement and green infrastructure.

Now, banks are moving from "risk to opportunity" in new sectors, such as energy efficiency, as well as making financing commitments to tackle critical issues such as climate change. Monitoring and measurement efforts are deepening to consider broader environmental and social impacts of credit and lending.

Major US-based global banks have made public financing commitments linked to environmental issues, including climate change:

CITI: In February 2015, CITI set out its commitment to lend, invest and facilitate a total of US$100 billion within the next 10 years to finance activities that reduce the impacts of climate change and create environmental solutions.[13] This was on top of a previous US$50 billion goal announced in 2007 that was met three years early.

BAML: Bank of America has committed to increasing its environmental business initiative to US$125 billion by 2025 through lending, investing, capital raising, advisory services and developing financing solutions, up from a previous commitment of US$50 billion announced in 2012.[14] This commitment itself expanded from a 10-year US$20 billion commitment made in 2007.

In addition, many smaller national or regional banks are also making commitments – including India's Yes Bank, which has set a target of mobilizing US$5 billion for climate action by 2020.[15]

1.3.1 Maturing Dimensions

Renewable Energy Finance

Banks are active both as investors and financial intermediaries within renewable energy project finance markets – at both utility and small scales. At utility scale, banks directly fund projects through non-recourse debt finance or provide corporate loans to developers. Banks provide finance for small-scale projects (such as domestic solar) through retail banking offerings like green mortgage products.

2015 saw over 50% of utility-scale renewable assets financed by non-recourse project finance, with debt transactions reaching US$104 billion. Research suggests that the shift towards debt finance was driven by rapid growth in China, where banks remain the primary funding channel.[16]

As learning effects and cost reductions have increased return, changing incentive structures have affected risk profiles and profitability of renewable energy investments – inspiring the development of new financial structures and securitization approaches based on equity holdings. Banks are highly active in the structuring of yieldcos and quoted project funds, which sold over US$7 billion to investors in the US and the EU in 2015 (up from US$4.8 billion in 2014).[17]

1.3.2 Emerging Dimensions

Energy Efficiency Finance

Energy efficiency financing lags behind renewable energy in spite of the strong economic, social and competitive rationale for up-scaling investments in buildings and industry. Evidence is emerging that green buildings have lower debt service ratios and higher resale values.[18] Progress is advancing at the G20 level through the Energy Efficiency Finance Task Group (EEFTG), which has developed the Voluntary Energy Efficiency Investment Principles. The European Bank for Reconstruction and Development (EBRD) and UNEP FI have brought together over 100 banks and leasing companies to form the Alliance of Energy Efficiency Financing institutions to the meet the financing challenge.[19]

Energy Efficiency: the US Experience

Major US international banks are rapidly increasing capital allocation for domestic energy efficiency investments. According to the banks, success in the US case stems from several key policy and market advantages – including the existence of energy service and technology firms that can act as creditworthy aggregators and intermediaries for smaller scale projects. Looking to the EU, where firms have experienced greater challenges, the lack of these types of firms working across jurisdictions has presented an impediment to scale – requiring public institutions to fill the gap.

Green Securitization: Covered Bonds

Issuance of new green asset-backed securities by banks – including covered bonds – represents a promising channel for banks to advance their critical maturity transformation role by moving green debt off their balance sheets (notably project finance and housing finance) into rated products for investors. This market is in a nascent stage – in 2015, German real estate and mortgage bank Berlin Hyp released the first-ever Green Pfandbrief based on loans assigned to the acquisition and construction of green buildings.[20] Many banks across the G20 are now considering how best to advance in this area, but progress may be contingent on how such securities are considered under existing capital requirements frameworks for banks.

Measuring Green Financial Flows

Efforts to track and report flows of green finance are increasing across G20 banking sectors. The most basic approach is cumulative assessment of discrete financial transactions supporting mature categories of green assets – primarily debt finance for renewable energy projects. Expanding beyond project finance to other types of financing – such as corporate lending – is proving a complex challenge, even in sectors widely accepted as "green". Key issues include a lack of accepted definitions to appropriately flag transactions as "green", and associated metrics to inform detailed analysis of credit and loan portfolios.

Banks are developing proprietary approaches to delineating what may be considered green, including environmental performance or emissions-based thresholds, relative exposure to low vs. high-carbon assets in client portfolios (i.e. percentage share of installed clean energy vs. conventional generation capacity), and best-in-class comparisons, responding to geographically specific sector guidelines. Certain banks, such as ING, undertake third-party verification against external benchmarks in corporate lending.

However, a fragmented landscape of approaches to tracking green finance flows may present a barrier to coherence and comparability across institutions.

Multilateral development banks have taken steps to measure green finance flows through the work of the International Development Finance Club (IDFC), which publishes an annual Mapping Report compiling the activity of its members.[21] The 2014 report finds that IDFC committed US$98 billion of new green finance in 2014, and its commitments showed a more than 10% increase from 2011 to 2014. Key to this reporting exercise has been the use the IDFC Common Principles for Climate Mitigation Finance Tracking, a methodology allowing for great comparability between institutions.

Driving Positive Environmental and Social Impact

As green banking activities in maturing markets expand to a wider range of projects and sectors, leading banks are now working to ensure that all financial flows drive positive social and environmental impact. The values-based banking movement, originating in the EU, is an emerging group of community banks, cooperatives, credit unions and specialized private banks seeking to support an inclusive, sustainable economy.[22] Dutch bank Triodos, which is focused exclusively on sustainable lending, is working to identify synergies with societal benefit in its loan portfolio – such as investing in energy efficiency improvements for social infrastructure. Banks such as UniCredit and ING are employing proxy data to assess portfolio-level impact on terrestrial resources and water, as well as identifying broader social impacts driven by total macroeconomic value-added. Société Générale has established a Positive Impact Finance project, with a new methodology for identifying projects that meet social needs while ensuring appropriate management of environmental impacts, as well as the issuance of a positive impact bond.[23] Other banks are working to embed positive impact objectives at strategic levels:

- The Global Alliance for Banking on Values (GABV) is group of 28 financial institutions aiming to use finance to deliver sustainable development. Guided by the Six Principles of Sustainable Banking, GABV institutions adopt a triple-bottom line approach that actively works to do good – not just avoid harm.[24]
- The UNEP FI Banking Commission established a working group on Positive Impact Banking in 2015.[25] A Positive Impact Roadmap has been drawn up whereby banks and investors will work with solution providers, programme initiators and the wider community of stakeholders on two complementary fronts: the Positive Impact Incubator and Positive Impact Principles, ultimately aimed at delivering a vibrant market place for positive impact needs, solutions and finance.

Cross-cutting Dimensions: Climate Change

Climate change is increasingly recognized as a strategic challenge for banks. A growing list of major international banks have committed to scaling back investment in high-carbon assets, including Bank of America, Citigroup, JP Morgan, Morgan Stanley and Wells Fargo.[26] Action is also being taken forward collectively by coalitions of public and private banks. Launched in December 2015 at COP21, the Principles for Mainstreaming Climate Action within Financial Institutions is a statement of leadership on climate-relevant financing.[27] The Mainstreaming Principles are now backed by 26 institutions that have publicly confirmed interest in voluntary participation and knowledge sharing on operational approaches.[28] Most of the supporting banks are public institutions; scaling up private sector participation stands as a key priority.

2 Drivers and Channels of Green Banking Progress

Green banking practice has progressed through different channels across G20 member countries, reflecting diverse market and policy frameworks, levels of financial system development, market demand and project pipelines, and levels of civil society engagement in financial system and environmental issues. In some developing countries, green banking is evolving in response to policy imperatives, from frameworks for environmental lender liability to lending requirements for priority green sectors. In the wake of the financial crisis, new social expectations in certain G20 countries are driving change in the way financial institutions understand their core responsibilities to consumers, clients and future generations.[29] These channels can be grouped into market-led actions, including the individual and collective activities of firms through market leadership, international initiatives, and banking associations, and policy actions to stimulate green banking progress.

2.1 Market-led Action

Green banking progress across the G20 has largely been the result of market-led action, either through the leadership of individual institutions or through collective efforts across the sector. Market-led action in some cases has prefigured the emergence of regulation, which has been implemented to universalize best practices.

2.1.1 Individual Action

The core drivers of green banking progress across the G20 are now shifting from a focus on risk management to the business opportunities unlocked by the low-carbon transition. Banks report that clients are increasingly aware of E&S risks and interested in potential opportunities, inspired by major international processes on sustainable development objectives in 2015 such as the Paris Climate Agreement.

Major international banks express that scaling up green banking activities is beneficial for overall competitiveness, as market signalling efforts lead to reputational benefits and attract client demand. Currently, there is lively competition among banks to access short-term intermediation business opportunities – such as underwriting green bonds in new markets. However, some banks note that the potential "greenwashing" of banking services to gain a competitive edge – including bonds or other securities linked to green loans, or green project finance – remains high in certain markets, with few mechanisms to monitor or verify transactions.

In countries at earlier stages of development, individual leadership has been catalysed by "soft" market standards – including the requirements of international financial institutions (IFIs). Banks in Russia and Mexico cited financing requirements of Multilateral Development Banks (MDBs) as the impetus for establishing in-house E&S risk management procedures; meeting these requirements paved the way for the consideration of sustainable development priorities throughout core bank strategy. In other countries, efforts to improve operational environmental performance (including energy efficiency) have emerged from reputational imperatives – but in many cases these are not linked to deeper strategic efforts.

2.1.2 Collective Action

International Initiatives

International market-led initiatives – such as the Equator Principles, Natural Capital Declaration, and Mainstreaming Principles – have played a range of important roles in advancing green banking practice, as described in Table 2 below:

Table 2: Roles and Functions of International Initiatives

Role	Function	Tools and instruments
Encouraging standards of practice	• Advancing standards for emerging green banking practices • Acting as a formal or informal quality standard	• Policy and governance frameworks • Implementation guidelines • Monitoring and reporting systems • Secretariat functions
Sharing knowledge	• Eliciting lessons learned • Facilitating exchange among signatory institutions	• Best practice guidance • Convening signatories • Annual reporting
Driving innovation	• Conducting research in priority areas	• Practical toolkits • Developing signatory statements

International initiatives in the banking sector can have beneficial impacts across a range of green finance areas, including capital markets. The Green Bond Principles, which initially emerged from the banking sector (being drafted by BAML and CITI) and have since brought together a range of financial institutions to support green bond market development.

However, banks express divergent views on the practical utility and ultimate impact of international initiatives. Key issues include:

- **Implementation**: Advancing from intention to action is a challenge when initiatives may be broad in scope but limited in practical activities or tangible deliverables, and banks are sceptical of the potential of voluntary efforts to achieve significant impact beyond signalling effects.
- **Reporting and verification**: While banks recognize the importance of mature partnerships like the EPs in bringing the industry towards a base operational standard, inconsistent reporting and a lack of third-party verification means that disclosure is often insufficient to assess actual impacts on financial risk and environmental performance. Issues relating to governance in member-driven initiatives have led to situations where consensus-based decision-making has led to a "lowest common denominator" approach.
- **Optical fallout**: One challenge for banks in supporting voluntary initiatives is overcoming the "optical fallout" of participation – including market signals potentially seen as negative by certain clients. Encouraging leading banks to share lessons on short and long-term effects such action could help support the broader case for participation.

Banking associations

Looking across the G20, research suggests that banking associations can play an important role in the implementation of voluntary efforts to advance mainstreaming and mobilization priorities at the national level. In recent years, banking associations have been at the core of efforts to advance green banking at national levels in Brazil, India, Mexico, the Netherlands, and Turkey:

- **Brazil:** FEBRABAN, the Brazilian Federation of Banks, has been fundamental to Brazil's significant progress on mainstreaming sustainability factors across the sector. A voluntary Green Protocol[30] served as the basis for system-wide requirements on banks to establish socio-environmental risk systems. Alongside this, FEBRABAN has introduced a self-regulation framework. More recently, its convening role was key to the development of a new methodology to measure green finance flows – which made up 9.5% of bank's total flows in 2014.
- **France:** The French Banking Association (FBF) has been very active in efforts to share experiences among French banks on options to combat climate change, including the development of a reference document setting out links between the banking sector and climate,[31] and the publication of guides identifying financing solutions for energy efficiency retrofits and electric vehicles.[32]
- **India**: The Indian Banking Association finalized the 'National Voluntary Guidelines for Responsible Financing' in 2015, which are sector-specific guidelines that combine and adapt best practices on green banking, including international standards as well as national experiences. Banks are now testing the principles, with feedback to the finance ministry expected in May 2016.
- **Mexico:** The Mexican Banking Association (ABM) has led a voluntary industry approach through the development of a "Sustainability Protocol", which was formally signed in April 2016. The Protocol provides guidance on both risk management and sustainable lending, coupled with a plan to provide capacity building and tools for implementation. Mexican banks reported that knowledge sharing with other banking associations – including FEBRABAN and Asobancaria – were critical to the successful development and approval of the protocol.
- **Netherlands:** The Dutch Banking Association (NVB) developed the Dutch Banker's Oath as a mandatory mechanism to encode ethical conduct and integrity principles into all professional behaviour.[33] Originally implemented in January 2013 for senior management, the scope of the oath was extended to all banking services professionals in 2015, now covering over 90,000 employees. The oath was introduced alongside a Social Charter, which specifically highlights that banks have a "social responsibility to contribute to a sustainable economy".[34]
- **Singapore**: In October 2015, the Association of Banks in Singapore (ABS) issued the Guidelines on Responsible Financing, which define the minimum standards on responsible financing practices. The standards will facilitate a more structured and systematic integration of environmental, social, and governance (ESG) considerations in banks' risk assessment and lending decisions, focused on key principles of public disclosure, internal controls, and awareness raising, capacity building, and skills development. The ABS and the World Wide Fund for Nature (WWF) will be conducting capacity building workshops for industry players throughout 2016 in preparation for the implementation of the ABS guidelines in 2017.
- **Turkey:** Turkish banks have also followed a market-led route to sustainable banking. In 2014, the Banks Association of Turkey (BAT) issued voluntary Sustainability Guidelines for the banking Sector, and included environmental responsibility in the Principles of Banking Ethics.

2.2 Policy Action

Some governments and regulators across the G20 are taking action to support greening of the banking system. These actions may include regulatory and supervisory interventions to enhance environmental risk management, as well as efforts to support capital mobilization.[35]

Evidence from across the G20 suggests that public finance can play a catalytic role in supporting the business case for green banking. The presence of public financial institutions, provision of risk sharing mechanisms, and alignment of incentives can help address market failures and leverage private capital.

2.2.1 Public financial institutions

While public finance is not within the immediate scope of the GFSG Work streams, Public Financial Institutions (PFIs) have proven to be especially relevant to acceleration of green banking progress in several G20 countries.

In the banking sector, PFIs include multilateral and national development banks, export-import banks, public 'commercial banks' and other national or regional 'stakeholder banks' (for example savings banks and cooperatives). In delivering their core functions, PFIs can support private banks to overcome market failures and other barriers to delivering green finance (Table 3).

Table 3: Core Functions of Public Financial Institutions

Role	Function	Tools and instruments
Facilitate access to capital	• Providing long-term capital • Facilitating access to private capital	• Concessional and non-concessional lending • Equity investment • International climate funds • Public-private partnerships
Reduce risk	• Risk sharing • Credit enhancement mechanisms	• Structured finance: guarantees • Public private partnerships • Junior debt/mezzanine financing
Fill the capacity gap	• Aiding project development • Reducing project risks	• Technical assistance • Capacity building • Information tools

Source: Cochran *et al.*[36]

By virtue of their ownership structures and mandates, PFIs can play a range of specialized market creation and supporting roles to scale up green banking, through several channels:

- **Targeted guarantees**: Across the G20, banks identify targeted guarantee mechanisms as critical to opening up new markets for green assets, and associated green banking services. Examples of these include credit guarantees by the US Department of Energy for renewable energy loans and the IFC's CHUEE program that partially guarantees energy efficiency loans. Developing new guarantees to cover a broader range of project areas (such as energy efficiency, water infrastructure, and sanitation) is seen as a priority by banks in Mexico, Brazil and India.
- **New market standards**: PFIs can exhibit leadership through the development of new market standards, pioneering or prefiguring practice within the private sector. For example, major European regional and national development banks have implemented broad policy reforms to guide lending decisions. Notable in this context is the European Investment Bank's (EIB) decision in 2013 to limit the financing of coal-fired power plants through the implementation of stringent emissions limits and the application of a shadow carbon price to energy investments.

- **Capital markets**: PFIs have long been at the core of green bond markets, and continued issuance can support the deepening of private sector expertise and familiarity with these asset classes in new markets.

Public Green Banks

The establishment of new public green banks has had transformative impacts on the business case for green banking in several G20 countries. Many jurisdictions have created publicly owned green banks to overcome specific investment barriers and leverage existing public resources by "crowding in" private capital. Green banks are active at the national level (Australia, Japan, Malaysia, Switzerland, UK), at the state level (multiple US states), and at sub-state and municipal levels in the US and the UAE. The UK Green Investment Bank (GIB) – the world's first green bank – has now backed 62 green infrastructure projects, committing £2.3 billion as part of transactions worth £10.1 billion.[37] The GIB has been critical to the development of new markets for green assets – including the renewable investment trusts.

Six of the world's green banks are now joining forces to scale up private investment to meet sustainability challenges with the launch of the new international Green Bank Network at the Paris Climate conference. However, green banks are still small compared with the green portfolios of most MDBs; the EIB, for example, has set a minimum standard of allocating 25% of overall lending to support climate – equating to €20.6 billion in 2015.[38]

2.3 Regulatory and Policy Alignment

Beyond dedicated public institutional efforts, existing financial incentive schemes can be aligned with green finance priorities. In France, fiscal incentives are used to target individual savings to public investment funds. Savings deposited in a Livret A (a tax-exempt fund) are utilized by public banks, including Caisse des Dépôts et Consignations (CDC). CDC-managed funds are half allocated to loans for social housing and local infrastructure, and half invested in capital markets. In the case of FCPI (Fonds Commun de Placement dans l'Innovation) – another tax-exempt investment product – asset managers directly invest 60% of the amount outstanding in innovative SMEs.

EU banks highlight the inclusion of a broader range of green finance mechanisms within tax benefit mechanisms for individual savers; for example, tweaking arrangements for savings and pensions to facilitate access to new green investment options.

Banking Diversity: New Routes to Scale

The divergent experiences of G20 banks in green capital mobilization are dependent on bank size. Multinational banks note much higher levels of traction through investment banking and capital markets activities (IPOs, debt issuance, project finance) than through retail operations, while structural factors (including secondary market liquidity and concentration risk in debt markets, for example) may act as barriers to entry for smaller players. Some banks are working to achieve scale by enhancing retail client awareness and engagement in new green products, services and technological tools.

Leveraging the diversity of banking institutions in this context may be an area of untapped green banking potential. Research conducted by the UNEP Inquiry suggests that banking sector diversity can enhance the availability and cost of finance for SMEs – with smaller non-commercial banks

particularly well equipped to service the needs of a "small" green economy.[39]

In certain cases, existing regulatory frameworks may have unintended consequences on new routes to scale – including the capacity of smaller banks to engage individual retail investors. In the EU for example, banks note that the raising of thresholds under investor protection regulation may increase barriers to individual client participation in smaller-scale green retails funds.

3 Barriers and Key Issues

Diverse experiences with green banking across the G20 have been shaped by both system-wide and sector-specific obstacles to green finance, including real economy and financial sector market failures. Market-led and policy actions have been implemented to address some of these issues, with varying degrees of success. However, key barriers to progress remain.

Barriers to green banking can be understood in a general hierarchy of importance and challenge:

- At the most fundamental level, green banking cannot thrive where there is no real economy demand – which may stem from the presence of unmitigated externalities or policy uncertainty.
- Where demand exists, the business case for green banking cannot be made if risk/return profiles are unbankable.
- Where leaders have emerged, further progress may be constrained by negative impacts on competitiveness and a lack of a level playing field.
- Where a clear business case exists, scaling green banking can be difficult in the absence of appropriate capacities, or a supportive financial culture.
- In markets where green banking practice is maturing and moving to scale, a lack of appropriate information flowing between the market and banks is a critical challenge – with systemic implications.
- As policy responses are implemented in advanced green banking markets, issues of policy coherence and regulatory alignment are now emerging.

3.1 Policy Uncertainty and Externalities

Banks across the G20 express that policy uncertainty over the transition to a green economy – including frameworks for renewable energy, clean technology, infrastructure investment, as well as broader industrial policies – continues to act as a significant barrier to long-term investments, and the necessary banking and intermediary functions underlying these transactions.

Similarly, a lack of policy coherence across economic, industrial, environmental and social policy frameworks can complicate the business case for green banking. The persistence of fossil fuel subsidies, or the presence of export-credit agencies covering risks on high-carbon assets, may stand in contrast with high-level environment and development commitments – slowing the communication of clear decarbonization signals to the financial sector. International policy and regulatory fragmentation may create arbitrage opportunities for international banks in financing high-carbon assets.

3.2 Building the Business Case

Rapid maturation of certain dimensions of the green banking agenda – such as renewable energy finance – has been driven by a clear business case, opportunities for replication, and competition to build expertise and reduce transaction costs through learning effects. However, banks across the G20 note that issues remain in developing a clear business case for increasing capital allocation to green assets, and reducing capital flows to high-risk investments.

3.2.1 Internal Barriers

Issues may emerge at a strategic level if risk management and business development priorities are not aligned with sustainability. Certain banks report that short-term, lower-risk returns associated with business-as-usual financing models continue to trump more complex environmental business opportunities. Where environmental factors are not clearly embedded with risk management functions, losses from stranded assets or reputational damage may arise if high-risk assets are mismanaged.

3.2.2 Maturity Mismatches

While maturity transformation is one of the critical functions of the banking sector globally, a widely recognized challenge for banks in delivering long-term green finance is the mismatch between maturity of long-term loans and the tenor of bank liabilities. Such issues may be compounded in countries where currency risks may exist, and appropriate hedging instruments are less developed. From the project sponsor's perspective, if a long-term green project can only be financed by short-term bank credit, it also means the company may face refinancing risks, which increase uncertainty on whether and at what price the project can continue to be refinanced – especially in the context of broader environmental and economic policy uncertainty.

3.2.3 Risk Profiles

Banks across the G20 report that clarifying the changing risk profiles of proven and emerging clean technologies is likely to have a catalytic effect on the capacity of banks to deliver finance at scale by lowering the cost of capital.

3.3 Retaining Competitiveness

Banks in emerging G20 markets note that taking action to enhance E&S risk management can have negative impacts on competitiveness, as more stringent requirements for information and due diligence pose transaction costs that affect transaction costs and time to market. This is highlighted as a key issue by leading banks in countries such as India, where despite the presence of policy-directed lending for green assets, regulatory requirements have not yet been imposed to consider E&S risk more broadly. The lack of a level playing field can compound barriers to further innovation by existing leaders.

Enhancing due diligence on individual environmental factors may also act as a barrier to achieving broader objectives, such as increasing access to finance for SMEs. In Mexico, banks note that many market players are transitioning to systems to expedite lending and credit granting processes for SMEs – and efforts to increase environmental due diligence on smaller loans (both in terms of client performance and tracking capital allocation) are likely to negatively impact competitiveness.

3.4 Capacity, Skills and Culture

While leading banks across the G20 are at the forefront of environmental risk assessment, ESG sell-side research and product innovation for green asset finance, a skills gap remains among mainstream banking practitioners in their appreciation and understanding of critical environmental factors. An increasing number of banks are targeting this skills gap as part of mainstreaming efforts, with internal trainings on environmental topics across risk analysis and relationship management functions. In many cases, environmental issues often remain ring-fenced within sustainability units, which may have little linkage to broader human resources and professional development efforts. Banks report that skills gaps may be exacerbated by:

- Lack of clear consensus on how to consider or evaluate environmental risks within financial decisions in the absence of precise guidelines;
- Disagreements on the materiality of sustainability factors across levels of management;
- Inadequate impetus to build internal capacity stemming from the lack of a clear business case; and
- A lack of mechanisms for skills upgrading on environmental issues through existing professional development (e.g. certifications).

Beyond knowledge gaps, barriers may be present in the underlying culture of banks. Failures of this culture – driven by incentive schemes, performance measurement, and norms of professional ethics – were central to the 2008 financial crisis, inspiring renewed regulatory efforts in several G20 countries.[40] While certain leading banks are embedding sustainable value priorities in organizational strategies and codes of practice, underlying factors – including short-termism – may remain a barrier across the financial sector.

3.5 Availability and Quality of E&S Information

In many G20 countries, the banking sector spans nearly the entire investment chain, from individual retail customers and institutional clients through to sell-side capital markets activities. In this context, the availability and quality of E&S information is critical for banks to fulfil their role in servicing the rest of the financial system – and remains a key challenge. Two dimensions are key.

3.5.1 Information from the Market to Banks

Banks in both developed and developing markets express difficulty in conducting robust E&S risk management, due diligence and identification of green finance opportunities due to a lack of appropriate E&S information. This issue is most prevalent in G20 countries where corporate disclosure frameworks are continuing to evolve. Where data may be available, issues of comparability across and within corporate sectors, as well as geographic contexts, often arise. Some banks are working to find innovative solutions – such as data on environmental infractions (i.e. pollution fines) to serve as proxies.

G20 banks express support for the work of the FSB Task Force on Climate-related Disclosures, and note that this effort has had an important signalling effect across the industry. Banks note that environmental issues beyond climate change – including natural capital valuation – remain important priorities for future collaborative efforts.

3.5.2 Information from Banks to the Market

Enhancing disclosure of information by banks to clients, shareholders and the broader market is critical for the scale-up of green banking activities. Demand for both risk and opportunity-related information is increasing significantly across the investment chain, from both clients and shareholders.

On the mainstreaming side, banks note that weak GHG reporting frameworks prevent an accurate reflection of portfolio carbon emissions or financed emissions, with high costs, the lack of a clear market signal and inconsistent demands across shareholders and clients acting as compounding barriers.

Furthermore, banks may face first-mover disadvantages from comprehensively reporting environmental risks and externalities in the absence of market-wide requirements. In countries such as France, new

legislation surrounding financing the energy transition is motivating banks to respond to these new challenges at a systemic level.

On the mobilization side, many banks provide information on select flows of green finance – primarily utility-scale renewable energy finance. However, banks report critical challenges with even the most basic dimensions of this process, stemming from a lack of clear definitions for green transactions, and the costs and complexity of enhanced reporting on green corporate lending and or structured finance products.

3.6 Financial Sector Regulatory Alignment

Banks across the G20 hold differing views on the impacts of regulatory frameworks – including capital adequacy requirements – on their capacity to scale up green banking activities. Certain EU international banks express that the stringency of capital adequacy represents a major constraint to engaging in green banking business, which may be considered as higher risk. Other banks consider capital adequacy constraints a generic factor unspecific to green capital allocation decisions – with the key issues instead stemming from overall commercial viability, risk appetite relating to geographic or sectoral considerations, and financing structures.

Banks agree that the consideration of risk weightings for green assets could have a very significant impact on the willingness of the banking sector to scale up capital reallocation – but do not agree on the overall benefit of undertaking such an effort, noting issues of complexity and potential unintended consequences. Certain banks caution the use of risk-related regulatory instruments – designed for stability – to motivate capital reallocation. Banks note that the underlying shift to higher capex requirements associated with longer-term financing for green assets may not be adequately reflected in central bank refinancing models.

EU: Regulatory and Policy Coherence

Banks in EU G20 member countries call attention to a range of barriers stemming from a lack of harmonization between national-level and EU-level regulatory frameworks, with the resulting fragmentation negatively affecting the capacity to advance new products such as specialist green infrastructure debt funds or off-balance sheet financing structures. Developing a cohesive European strategy for green banking could help bridge some of the gaps created by differences in national implementation of EU-level legislation. As the EU moves forward, implementing a broader sustainable finance strategy could help link existing ongoing efforts.

4 Conclusions and Policy Options

4.1 Conclusions

Several conclusions can be drawn regarding green banking market practice in the G20:

There is some convergence in practitioner understandings of green banking, but perceptions and priorities vary significantly across the G20. There is a growing recognition among banks of the strategic importance of environmental factors for long-term value creation – both on their balance sheets and through intermediary activities to allocate capital. However, the diversity of factors affecting green banking priorities (including size, business model, geographic spread, and composition of assets and liabilities) complicate efforts to compare emerging practices, even when looking across peers or competitor institutions.

The absence of a consistent global framework to assess green banking practice – despite growing interest and activity – may be holding back further progress. Efforts to track green banking progress could be constrained by the absence of a consistent international framework across all banking activities. At present, there is no equivalent to the PRI's system for self-assessment and reporting which exists for the investment community.

The success of efforts to greening the banking system is contingent on levels of financial system development and broader environmental regulatory contexts. Green banking policy priorities must be seen in the context of economy-wide environmental and social issues – including the effectiveness of regulatory and policy mechanisms to promote green growth and mitigate pollution. Assessing the system-wide costs and benefits of green banking stands as a priority for further research at the country level.

There is an emerging rationale for public action to support greening of the banking system – which is as closely linked to long-term economic growth as it is to sustainability.

By and large, the advance of the green banking agenda to date has been driven by responses to market-level operational issues – including a recognized need for improved environmental risk management, the identification of new business opportunities, and the needs and expectations of civil society. Now, we are at a moment where this operational-level action is becoming increasingly relevant for broader economic growth imperatives.

G20 countries have committed to realigning growth pathways with sustainable development – as evidenced by the recent submission of INDCs and the agreement of the SDGs. Meeting these goals while maintaining economic growth is likely to be a critical challenge for the G20 over the coming decade.

The emerging practices outlined in this paper suggest that a thriving green banking sector can play a fundamental role in this effort – provided governments are able to deliver a level playing field, share emerging best practices, and unlock new opportunities for investments in sustainable growth.

Developing countries

In G20 emerging markets, the dominance of banks as sources of finance calls attention to the need to strengthen the business case for green banking, including for green infrastructure investment. Financial inclusion efforts and the emergence of mobile technologies are disrupting traditional retail banking models, opening up new markets for financing domestic clean technology investments. In G20 countries at more initial stages of financial system development, progress in an identified financing area – such as

energy efficiency lending – may significantly benefit from pilot studies to demonstrate potential solutions, leading the way to replication and securitization to the market. Countries may also seek to anticipate future barriers to green banking with comprehensive policy roadmaps – like in Indonesia, where the regulator (OJK) has taken forward a system-level roadmap for sustainable finance.[41]

Developed countries

In G20 economies at high levels of financial system development, there is increasing recognition of the need for the financial system to support long-term economic growth – while also supporting sustainability priorities. An increasing amount of G20 governments are implementing strategic spending programs to crowd in private capital for investment in green infrastructure and SMEs:

- Canada's new government has announced plans to significantly increase spending to support a clean growth economy, with CA$5 billion allocated to green infrastructure (including clean transportation and energy efficiency), as well as a new CA$2 billion Low-Carbon Fund to reduce emissions and finance innovative technologies.
- In the EU, the Juncker Plan is seeking to mobilize €315 billion for infrastructure, innovation and SMEs – 80% from the private sector – with a strong focus on sustainability priorities such as clean energy, resource efficiency and public transport.
- In Japan, alongside the broader "Abenomics" policy effort, the government has renewed its focus on promoting clean energy and energy efficiency – with the 2016 budget requests showing a ¥32.2 billion application to enhance the efficiency of Japan's building stock.

While these investment plans are not banking-specific, harnessing the banking system will be critical to the success of these efforts. Furthermore, a banking sector that has a strong appetite for green lending and credit, an understanding of green infrastructure project finance and experience in securitizing smaller-scale projects (such as household energy efficiency) will ultimately deliver higher leverage ratios, reducing pressure on constrained public financial resources. The intermediation roles of banks are also central to this challenge, as they provide the investment information and broader service architecture necessary to channel institutional investor capital towards investments in sustainable recovery.

4.2 Policy Options

The G20 may seek to support the scale-up of green banking through national policy action, and coordinated action at international levels. Initial policy options for consideration include:

Bringing together emerging practice

1. **Develop comprehensive voluntary principles**: Countries could consider voluntary adoption of sustainable banking principles with a view to levelling the playing field and scaling up green banking. Building on the experience in the investment community, a comprehensive set of principles could integrate risk management with an expanded green lending focus across banking operations. At the international level, organizations such as the IFC of the World Bank Group could promote the adoption of voluntary principles to facilitate cross-border green banking activities.
2. **Clarify green definitions:** At the country level, there is a need for definitions of green credit and green finance, and data on green financial flows could be published. Convergence between "green credit" and "green bond" definitions would also help to accelerate the development of the green bond market by ensuring consistency between bank balance sheets and debt capital market

products. International organizations such as the World Bank could explore the possibility of compiling and publishing internationally comparable green finance data, including those on green credit.

Helping to make the business case

3. **Develop green securities to support maturity alignment**: supporting the development of green securitization can help increase bank appetite for green lending by providing a conduit to pass on debt to investors through asset-backed green products (such as securitized green loans). Banks could also be encouraged to issue green securities to fund long-term green loans.
4. **Consider how public financial institutions can leverage green loans and credit**: Share experience on the cost-effective deployment of public finance to support green lending, including from national and international public finance institutions.
5. **Enhance professional education**: Work with banking associations and academic centres to incorporate green and sustainable banking into core academic and professional education. Universities could consider establishing programmes to train graduates who will be specialized in the field of sustainable banking and green finance.

Sharing knowledge and enhancing information flows

6. **Develop national collaborative processes**: Encourage country-driven work programmes bringing together banking associations, government agencies and market stakeholders. A case in point is the need to collaborate between banking regulators, environmental regulators and stock exchanges to ensure environmental information of firms are made available in a convenient format and platform as an important basis for the lending decisions by banks.
7. **Expand global learning networks**: Promote international knowledge sharing through the expansion and deepening of the Sustainable Banking Network (SBN) and other capacity building platforms. The SBN could be expanded to more countries, and beyond banking regulators and banking associations to also work with bank training centres and institutes to develop national training programs for CEOs as well as middle-level managers in charge of sustainable banking businesses.
8. **Enhance environmental information flows to and from banks:** Promote the disclosure of environmental information of borrowers. Disclosure by banks of green performance information, including total green finance flows, and the degree of adoption and implementation of core practices in banking business, could support system-level monitoring and encourage a level playing field. Banks could devote resources to analyse the impacts of environmental factors on their loan portfolios and other assets and report the allocation and volumes of green financial flows.

Removing unintended barriers

9. **Support policy alignment:** Develop integrated green banking strategies, considering how broader financial regulatory and policy frameworks may constrain the capacity of banks to innovate, replicate, and scale up green loans and credit.

Appendix: Engagement Process

SUMMARY of Practitioner Engagement

G20/Observer Country	Institution	Answer
Brazil	Itau	Telephone Interview
China	ICBC	Written Response
EU	ING	Telephone Interview
EU	Triodos	Telephone Interview
France	Société Générale	Telephone Interview
Germany	Deutsche Bank	TBC
India	Yes Bank	Telephone Interview
Italy	UniCredit	Telephone Interview
Japan	UNEPFI members	Written Response
Korea	UNEPFI Members	Written Response
Mexico	Banorte	Telephone Interview
Mexico	CI Banco	Written Response
Russia	Centre-Invest Bank	Written Response
Russia	Vnesheconombank	Telephone Interview
South Africa	FirstRand	Written Response
Spain	BBVA	Written Response
Switzerland	UBS	Telephone Interview
Turkey	Garanti Bankasi	Written Response
Turkey	TSKB	TBC
UK	Barclays	Telephone Interview
UK	HSBC	Telephone Interview
US	BAML	Telephone Interview
US	CITI	Telephone Interview

Banking Practitioner Questionnaire

A) Progress on green banking

- Where has your firm made the greatest progress on green banking and sustainable finance during the last three years – both in terms of mainstreaming sustainability factors, and mobilizing capital for green loans and credits?

B) Barriers, challenges and drivers

- What do you see as the market-wide challenges and barriers to scaling up green banking in your country – both in terms of action in the real economy, and within the financial system specifically?
- How do you see the regional green banking market evolving in coming years?
- What do you think about the role of financial industry associations in this debate? What has worked best, and where could it improve?

C) Incentives and Public finance

- What types of government incentives have been effective for sustainable finance? Which ones less effective? What further actions could be relevant for greening banking?
- Where could public finance – or public institutions – play a useful role in bridging the gaps?

D) Indicators for Green Banking

- How best to measure green loan and credit flows, and the impacts of these flows on environmental performance? Is this plausible considering the scope of bank balance sheets and the due diligence involved?
- How best to assess impacts on the quality of financial assets from integrating environmental and social factors (e.g. return on equity, non-performing loans)?

E) Suggestions for G20

- Based on your outlook for coming years, what could the G20 practically do to promote green banking?
- Do you believe that existing initiatives (e.g. SBN, market-led principles) have the potential for meaningful scale-up through the G20?
- What are the top priorities for coordinated international action through the G20 process?

Endnotes

[1] Detailed information and statistical indicators of banking system characteristics can be found within the World Bank Global Financial Development Database, available at: *http://data.worldbank.org/data-catalog/global-financial-development*
[2] *http://www.fsb.org/wp-content/uploads/shadow_banking_monitoring_dataset_2015.xls*
[3] *http://www.imf.org/external/pubs/ft/weo/2015/02/weodata/index.aspx*
[4] For more information, please refer to: UNEP Inquiry (2015). The Financial System We Need: Aligning the Financial System with Sustainable Development, as well as the UNEP Inquiry's country working papers (available at: *http://unepinquiry.org/*)
[5] This paper provides a stocktake of market practice, and does not focus on policy or regulatory action to green the banking system. Interested readers should refer to GFSG Background papers #4 (Lessons from SBN) and #10 (Greening Banking Policy) for more information.
[6] Many countries have implemented a range of frameworks or developed legal opinions on environmental lender liability, including the US, the UK, Brazil, and China. Detailed analysis of these case examples can be found in Sampaio, R.S., Diniz, E., Maristrello Porto, A.J. and Martins Lopes, L.D. (2016). Lenders and Investors Environmental Liability: How Much Is Too Much? UNEP Inquiry Working Paper, 2016. *http://unepinquiry.org/publication/lenders-and-investors-environmental-liability-how-much-is-too-much/*
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[16] *http://fs-unep-centre.org/publications/global-trends-renewable-energy-investment-2016*
[17] *http://fs-unep-centre.org/publications/global-trends-renewable-energy-investment-2016*
[18] This is an emerging area of research, including proprietary research undertaken by financial institutions. In the public domain, academic research has shown that securitized commercial mortgages of energy efficiency buildings are less likely to default. See: An, X. and Pivo, G. (2016). Default Risk of Securitized Commercial Mortgages: Do Sustainability Property Features Matter? *http://www.reri.org/research/files/2014funded_An-and-Pivo.pdf*
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